DECEMBER '59

MODERN TEXTILES MAGAZINE

Specializing in Man-Made Fibers and Blends since 1925

FIBERS

FABRICS

FINISHES

At Jordan Mills, key men RABBITT, JORDAN, CUMMINGS head a happy management team—story page 33

THIS MONTH

New elastic fibers

Twist-setting carpet nylon

Progress in blends finishing

More on machine assignments

PLUS 12 MORE TIMELY ARTICLES AND EXCLUSIVE REPORTS

VIB

*Vacuum Impregnated Bobbin**

DRAPER CORPORATION

* *Patents Pending*

"We had a problem . . . SONOCO solved it!"

THE NEED: Split yarn tube to fit spindles without expanders

A large manufacturer was using a synthetic yarn, supplied by one of Sonoco's customers, to cover wire. The yarn was shipped on a split tube which permitted the empty tube to be removed and replaced with a filled package without cutting the wire. The spindle used on the wire-covering equipment had small splines but no expanders. If the tube I.D. varied as much as .004", the tube could not be put on the spindle or the fit was too loose for the spindle to drive the yarn package.

An experienced Sonoco sales engineer, with the assistance of the research and production departments, quickly solved this problem with a simple and ingenious idea. First, the inside diameter of the tube was slightly increased to assure a proper fit and, second, the interior surface was so constructed to give the splines a gripping area permitting the spindle to drive the package properly.

Only Sonoco with 60 years' experience, plus modern research and completely integrated manufacturing facilities, could solve this problem quickly. It is typical of countless cases where Sonoco technical and production "know-how" has benefited the industry. *Let Sonoco experience help you!*

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1899 - 1959

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Products for Textiles

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MODERN
TEXTILES MAGAZINE

December, 1959 Vol. 40, No. 12

Modern Textiles Magazine
Established 1925

* * *

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Synthetic Organic Chemical Manufacturers Association ..... 41 E. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York

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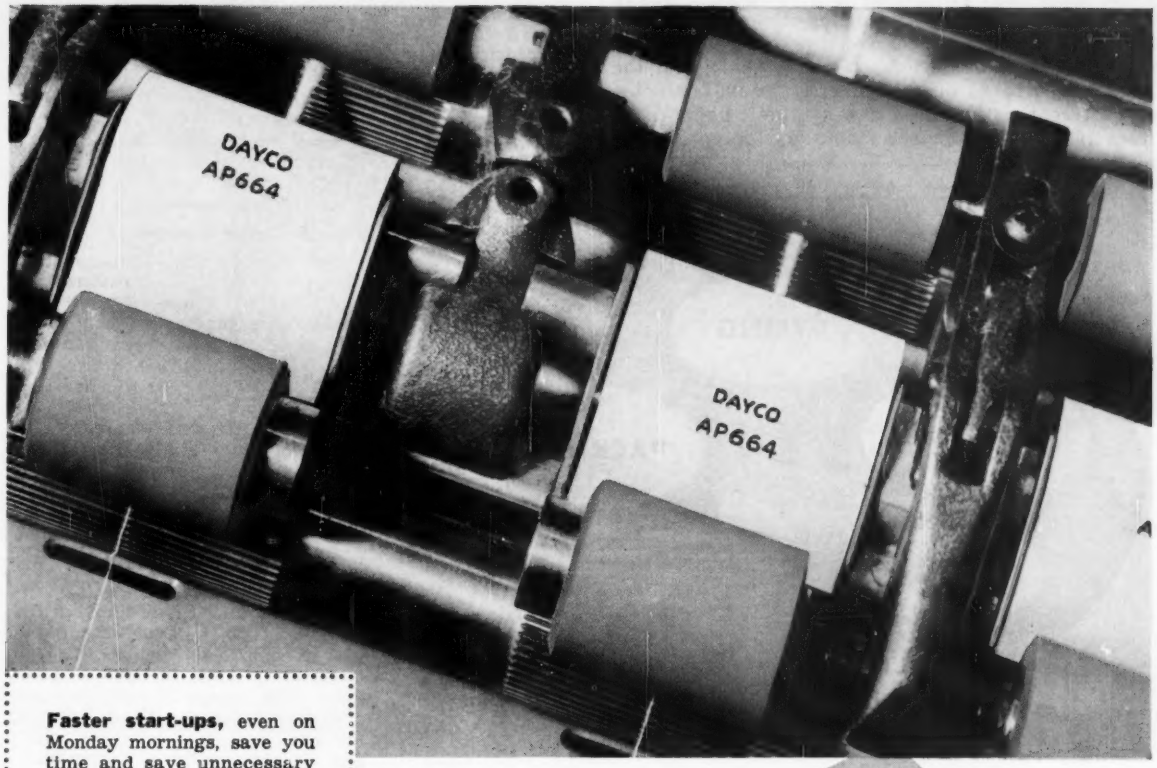
SPEED! QUALITY! ECONOMY!

You get all 3 with Dayco Aprons and Cots



Faster start-ups, even on Monday mornings, save you time and save unnecessary costs. That's because Dayco Aprons and Cots never become gummy . . . won't adhere to fibers in any weather. With a dry, moisture-free surface that resists static build-up, the Dayco combination cuts ends-down and laps-ups to a minimum.

10% better quality is easy to prove with the smoother drawing action of the new Dayco Embossed Design Aprons. The embossed inner surface . . . really the first new advance in apron design in over 20 years . . . cuts nose bar drag in half to let the new apron glide over the nose without chatter or tucking. Try it yourself!

"Economy" costs no more with the Dayco combination. They're absolutely the finest available, yet Dayco Embossed Design Aprons cost not one penny more than conventional aprons. With less friction drag than any other apron tested, the new Dayco Embossed Design Apron cuts waste collection at the nose bar by fully 50%.

Reinforced for longer life with a stabilized inner ply, Dayco Aprons won't curl, stretch or take a permanent set. You'll want to pair them with Dayco Cots . . . outstanding for greatest resistance to pitting, grooving or glazing in any operation. That way, you double your savings and keep downtime to the barest minimum.

Increase your output of fine quality yarn by outfitting your frames with Dayco's exclusive Embossed Design Aprons and oil and heat resistant Dayco Cots. Order from your Dayco representative the next time he calls or write The Dayon Rubber Company, Textile Division, 401 S.C. National Bank Building, Greenville, S.C.

Dayton Rubber

Dayco and Thorobred Products for Better Spinning and Weaving

OVERSEAS PLANT, THE DAYTON RUBBER CO., LTD., DUNDEE, SCOTLAND

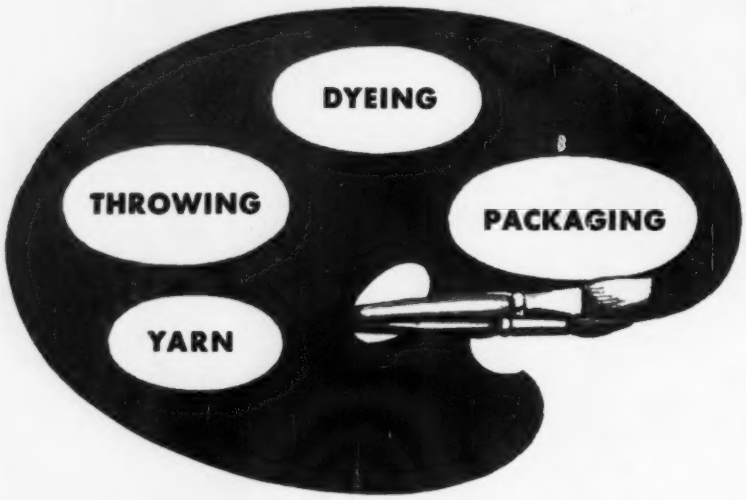
More Polypropylene Due

Novamont Corp. will more than double production capacity of its Moplen polypropylene at its Neal, W. Va., plant to 25 million pounds annually. Lucio Lucini, Novamont president, in making the announcement on his return from the Milan, Italy, headquarters of Montecatini, parent company of Novamont, stated that plant designs have been revised to accommodate the new production figures. He added that this planned increase would not delay construction start-up scheduled for late this year, with the plant slated to go on stream early in 1961. Montecatini recently introduced new synthetic fibers made from 100% polypropylene staple and polypropylene blends.

Viscose Process Findings

Increased knowledge about the degradation of hemicellulose at high temperatures, of interest to manufacturers of viscose rayon tire cord, has been obtained in research laboratories of Buckeye Cellulose Corp., according to R. W. Collier, a company research chemist. A low hemicellulose level in dissolving pulps is desired by cellulose users, particularly by producers of super strength viscose tire cord and cellulose derivatives.

Marie Easterwood, another Buckeye research chemist, also read a paper before the 136th national meeting of the American Chemical Society in Atlantic City, N. J. Findings of a year-long study, Easterwood said, describe the effect various factors have on viscose process reaction efficiencies.



A COMPLETE PACKAGE

of natural or dyed NYLON, DACRON or RAYON filament yarns in all deniers and types to meet your quality standards — in one order, for one charge.

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PIONEERING SYNTHETIC YARNS FOR OVER 35 YEARS

French Rayon Dumping?

The U.S. Tariff Commission has begun an investigation into reports that rayon staple fiber from France is being or is likely to be sold in the U.S. at less than fair value and in violation of the 1921 Antidumping Act. No hearings will be held by the commission. Interested parties submitting information had to file their statements (with at least 15 copies) with the commission by November 13, 1959.

Southern Machinery Moves

Southern Machinery Co., recently announced new name of the Southern Loom Development Co., has moved to a new location in Greenville, S. C., at 5806 Augusta Road. The company manufactures and distributes the Hunt Let-Off, for use on looms weaving plain and fancy cottons, synthetics, woolens and worsteds.

Quality Control Meeting

The 10th annual conference of The Textile Division of the American Society for Quality Control will be held February 18th and 19th at the Clemson House, Clemson, S. C. The program features discussion groups on practical process control and talks on educational and technical quality control. Reservations to attend may be made by writing R. G. Mitchell, International Latex Corp., Dover, Md.

Woolen Group Elects

G. Norman Winder was re-elected president of Woolens and Worsteds of America, Inc., at the association's first annual meeting recently in New York. Other officers elected were: William I. Kent, Kent Manufacturing Co., Ronald A. Mitchell, Cyril Johnson Woolen Co., Inc., and George A. Ott, Richard Ott & Sons, vice presidents. J. M. Jones was re-elected treasurer and Robert S. Taplinger renamed secretary. Elected as directors in 1960.

Vitel

*means "Freedom"**

This "Fresh Look in Fashion" started with VITEL, new polyester resin by Goodyear. From VITEL came VYCRON, sensational polyester fiber by Beaunit Mills, Inc., Fibers Division. And from VYCRON: this fashion-fresh fabric by a leading textile mill. Yes, VITEL has started a stunning success story. Behind it—a revolutionary Goodyear policy—we make only the resin, *not* the fiber. Result: **new freedom to weave a wider range of wonder fabrics.*

Properties of fiber spun from VITEL:

- *Exceptional yarn strength—good fiber-to-fiber cohesion.*
- *Outstanding dyeability and colorfastness.*
- *Excellent wrinkle-resistance—ideal for wash-and-wear.*
- *Easy processability on standard spinning systems.*

For more information, write: Goodyear, Chemical Division, Dept. L-9476, Akron 16, Ohio

GOODYEAR
CHEMICAL DIVISION

Vitel—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio Vycron—T.M. Beaunit Mills, Inc., Fibers Division

Von Kohorn's 50th Birthday

A half century of worldwide activity in the manmade fibers field will be observed this month by the Von Kohorn group of industries. Founded in December, 1909, by Baron Oscar Von Kohorn, the Kohorn companies since then have been continuously engaged in the design and manufacture of manmade fiber machinery and in the construction of complete manmade fiber plants. The Von Kohorn group also operates many of the plants it has built throughout the world.

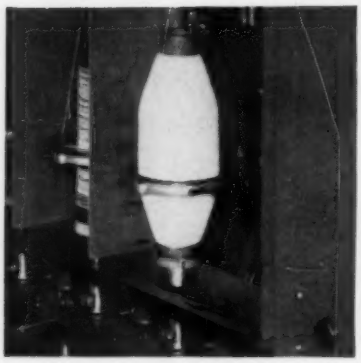
Baron Von Kohorn, now retired, is still active in the Kohorn companies as an adviser and "elder statesman" to the Von Kohorn corps of engineers. His elder son Henry is president and the younger son Ralph is executive vice president.

Over the years, the Von Kohorn companies have built 128 fiber plants in 33 countries. Currently the firm is constructing plants in The Soviet Union, Formosa, India, Egypt, Poland and Argentina. Offices, staffed by a total of 300 employees, are maintained in Bombay, Buenos Aires, Darmstadt, London, Nassau, Osaka and Panama.

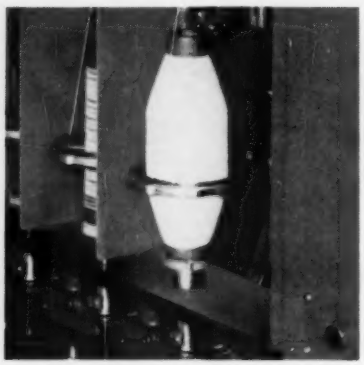
WHITE

NON-FLUID OIL

TRADE MARK REGISTERED



Ordinary ring oils blacken yarn, cause loss of production



White NON-FLUID OIL stays on rings, increases output per frame

White NON-FLUID OIL does not spread out on rails to spatter bobbins. It stays on rings and lubricates effectively. This eliminates blackened yarn, reduces broken ends to a minimum; or more simply, it increases your output per frame.

White NON-FLUID OIL adheres to wearing surfaces. Its exceptionally high lubricating properties and tenacious nature keep travelers running almost friction-free. This reduces the pull at high speeds, resulting in fewer broken ends, and a yarn of more uniform quality.

White NON-FLUID OIL is neutral; it does not become gummy. Therefore, it lasts longer on wearing surfaces than petrolatum, liquid oil or ordinary ring greases. And you effect still another saving! *Fewer applications and less lubricant are needed.*

Send for free testing sample of White NON-FLUID OIL and Bulletin T-16. You'll be amazed at the difference.

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NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.

New Plant in Mexico

A plant for the production of Nylon 6 and Nylon 66 textile yarns and tire yarns is to be built at Monterrey, Mexico as the joint venture of Celulosa Y Derivados, S.A. (Cydsa), Monterrey, and Algemene Kunstzijde Unie, N.V. (AKU), Arnhem, Holland, AKU is an affiliate of American Enka Corp. and has been assisting Cydsa in the production of quality rayon textile and tire yarns.

Hunter, Leyland Merge

The Thomas Leyland Machine Co., Readville, Mass., has merged with James Hunter, Inc., Mauldin, S. C., southern subsidiary of James Hunter Machine Co. Leyland's line of expanders and flexspools will be manufactured by James Hunter, Inc. for users in the North and South.

New Silk Screen Plant

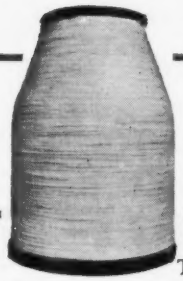
The first silk screen fabric printing plant has been set up at St. Thomas, Virgin Islands, through the enterprise of Jim Tillet. Tillet's father, George Tillet, is said to have invented many of the machines presently used in the silk screen process. For 18 years, before moving to St. Thomas, Jim Tillet operated a similar plant in Mexico.

New Faigenbaum Firm

Roy D. Faigenbaum, who recently resigned as vice president —sales, of Fidelity Machine Co. has established his own organization for the sale and service of knitting machinery, attachments and accessories. He has opened offices at 7420 Mountain Ave., Melrose Park, Philadelphia.

Two New Enka Directors

Gaylord Davis and Frits Prakke have been elected directors and members of the executive committee of American Enka Corp. Davis is financial vice president and general counsel and Prakke is vice president in charge of manufacturing for the corporation which produces rayon and nylon.



Ring Twisting or Uptwisting . . . WHITIN has the Twister for you!

To provide precisely the right twister for maximum production, highest quality twisting, on the largest practical package to secure knot-free yarns, Whitin manufactures 49 models of ring and uptwisters. Whitin can supply the type and model most suitable for any twisting need for natural and synthetic fibers.

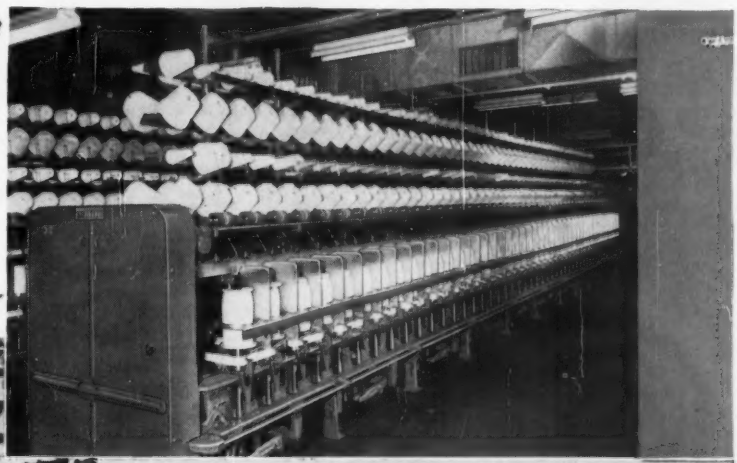
The machines illustrated here are widely used by leading mills in the production of coarse yarns for carpets and tufted rugs; they have also made outstanding records in the tire cord and paper yarn industries. All Whitin Twisters and accessory machines are advanced in design, rigid in construction and precision built.

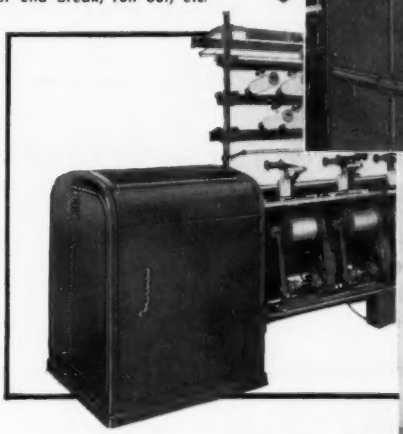
COMMODORE* RING TWISTER

For wet or dry twisting, the Commodore is available in gauges from 7" - 10", with rings ranging from 5½" - 8½" and, normally, with 92 or more spindles. Package weights are from 7.0 - 11.0 lbs. of knot-free plied yarn.

SPOOLMATIC* REDRAW DOUBLER with Electronic Slub Detectors

For winding one, two or more ends at 100 - 300 yds./min., package up to 9.0 lbs. This machine provides new scope for tufted rug or carpet yarns. Exclusive electronic slub detectors stop each winding position for end break, run out, etc.





CABLE-KING* UPTWISTER

Produces several types of take-up packages: headless, parallel-wound on paper tube; straight spool wind on double head bobbin; or cone wound on paper tube. Packages up to 9.0 lbs. and speeds up to 5250 RPM. Ideal for cabling nylon tire cord and other heavy industrial yarns.

Whitin CABLE-KING UPTWISTER is available in lengths of 60 - 120 spindles, 11" gauge.

*Trade mark

For complete information, ask your Whitin representative — or write direct to us.

Whitin MACHINE WORKS

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CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

QUESTIONS AND ANSWERS ABOUT EASTMAN KODEL® POLYESTER FIBER

Q: What is Kodel?

A: It is a polyester fiber, possessing unique qualities not found in other polyesters.

Q: In what forms is it available?

A: In various lengths to suit the system of spinning . . . in 1.5 D/F, 3.0 D/F, 4.5 D/F. Also available in tow form. The fiber is packaged in bales weighing approx. 350 lbs. The tow is packaged in boxes weighing approx. 150 lbs.

Q: What are its main uses?

A: Most types of men's, women's and children's wear.

Q: Can Kodel run on all spinning systems?

A: Yes, including cotton, worsted, woolen and converter systems, using conventional equipment without major changes in processing or mechanical conditions. Due to its low specific gravity of 1.22 as compared to other polyesters of 1.35-1.38, an increased bulk factor must be considered in determining lap sizes, fabric construction, etc.

Q: What about bleaching, dyeing, finishing and printing?

A: Kodel is dyed and finished similar to other polyesters. Can be bleached, although the fiber is very white. Chemical finishing is usually unnecessary since Kodel exhibits an excellent hand, and is high in wrinkle recovery, wash-and-wear performance and shrinkage control.

Q: What fiber constructions is Kodel best suited for?

A: Kodel has been successfully used to style a wide range of fabrics from light-weight batistes to heavy flannels. It has high heat resistance (up to 425 degrees F.), extra covering power and outstanding resistance to pilling.

Kodel is the trademark for Eastman polyester fiber

EASTMAN CHEMICAL PRODUCTS, INC., SUBSIDIARY OF EASTMAN KODAK COMPANY, 260 MADISON AVENUE, NEW YORK 16, NEW YORK

1909 1959

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THE WORLD'S MOST EXPERIENCED BUILDERS AND OPERATORS OF MAN-MADE FIBER PLANTS OFFER

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WE HAVE INSTALLED AND OPERATED MORE MAN-MADE YARN, FIBER & FILM PLANTS THAN ANY OTHER ORGANIZATION IN THE WORLD

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WHITE PLAINS, N.Y.

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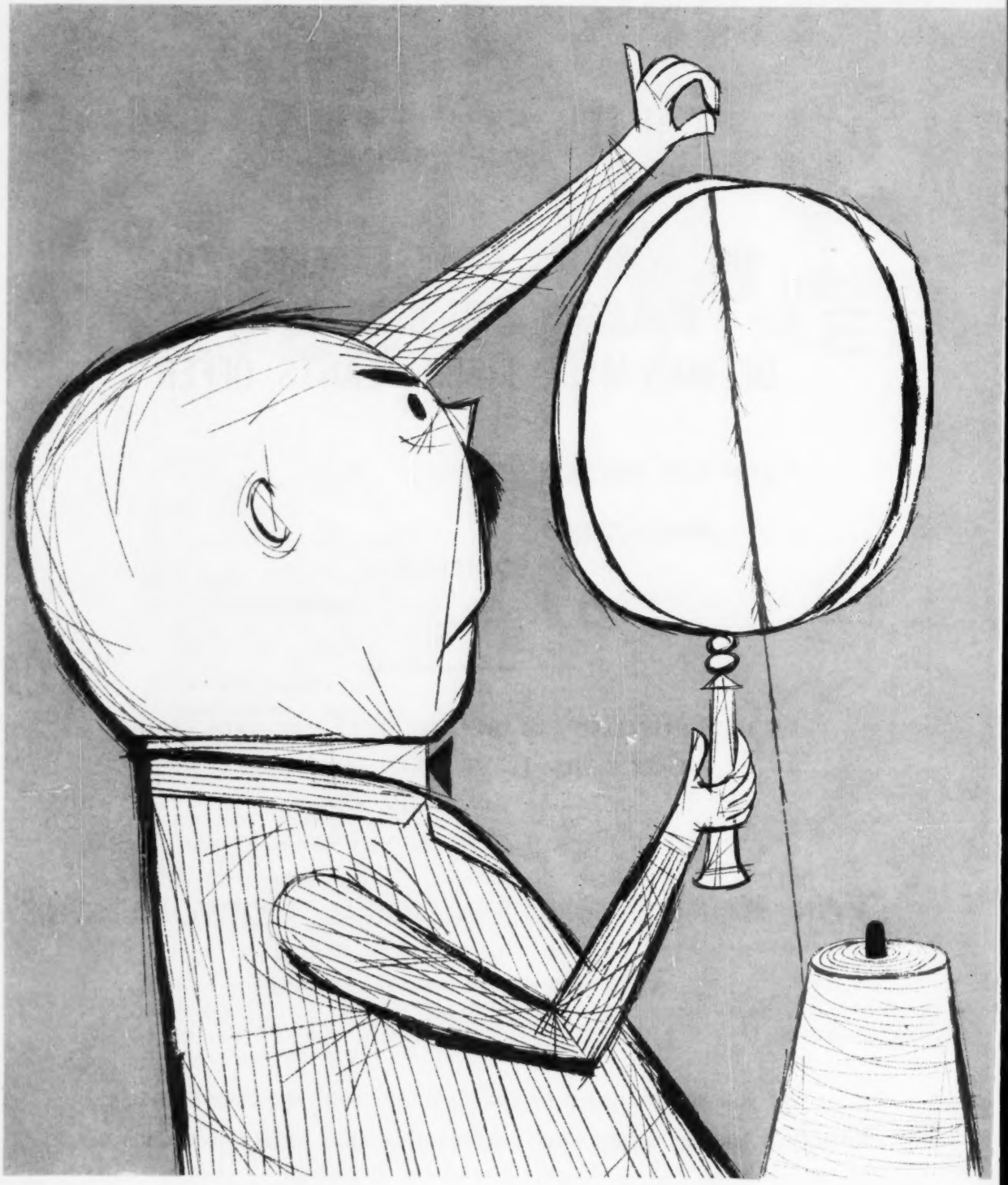


flaws?

I.R.C. CONTINUOUS PROCESS RAYON COSTS NO MORE THAN ORDINARY YARN. YET IT'S PERFECT INCH BY INCH... UNIFORM MILE AFTER MILE!

What does it cost you every time you have to stop a loom because of flaws in your yarn?

This sort of thing can't be helped when you use rayon yarn made the ordinary way.

Ordinary yarn gets *handled* in production from stage to stage...gets picked up, put down, unwound, rewound, picked up and moved on again. This is what causes the broken filaments, the knots, and all the other damages that cut into your profits!

But, with I.R.C. Continuous Process rayon yarn it's different.

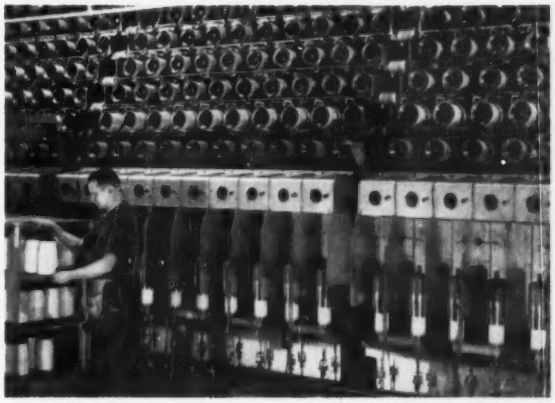
I.R.C.'s production process is *continuous*, just as the name says. *All* of the processes are part of *one continuous* vertical system, so that the yarn flows without interruption from spin-bath to a twisted package.

Nobody touches it.

Nobody damages it.

You get yarn that's as perfect and uniform as it's possible to produce.

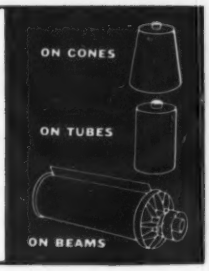
You pay no more...and it saves you plenty!



I·R·C

Industrial Rayon Corporation
Cleveland, Ohio

660 Union Commerce Bldg., Cleveland 1, O.
500 Fifth Ave., N.Y. 36, N.Y.
627 Guilford Bldg., Greensboro, N. C.



Producers of Continuous Process Rayon Textile Filament Yarns. Tyrex* Cord and Fabric for Tires. Nylon Staple.
*Certification mark of Tyrex Inc. for viscose tire yarn & cord.

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ESPECIALLY FOR CELLULOSIC FABRICS

TOPS 'EM ALL FOR HIGH RESISTANCE TO CHLORINE DEGRADATION

Only Resin O-4 can give you these advantages:

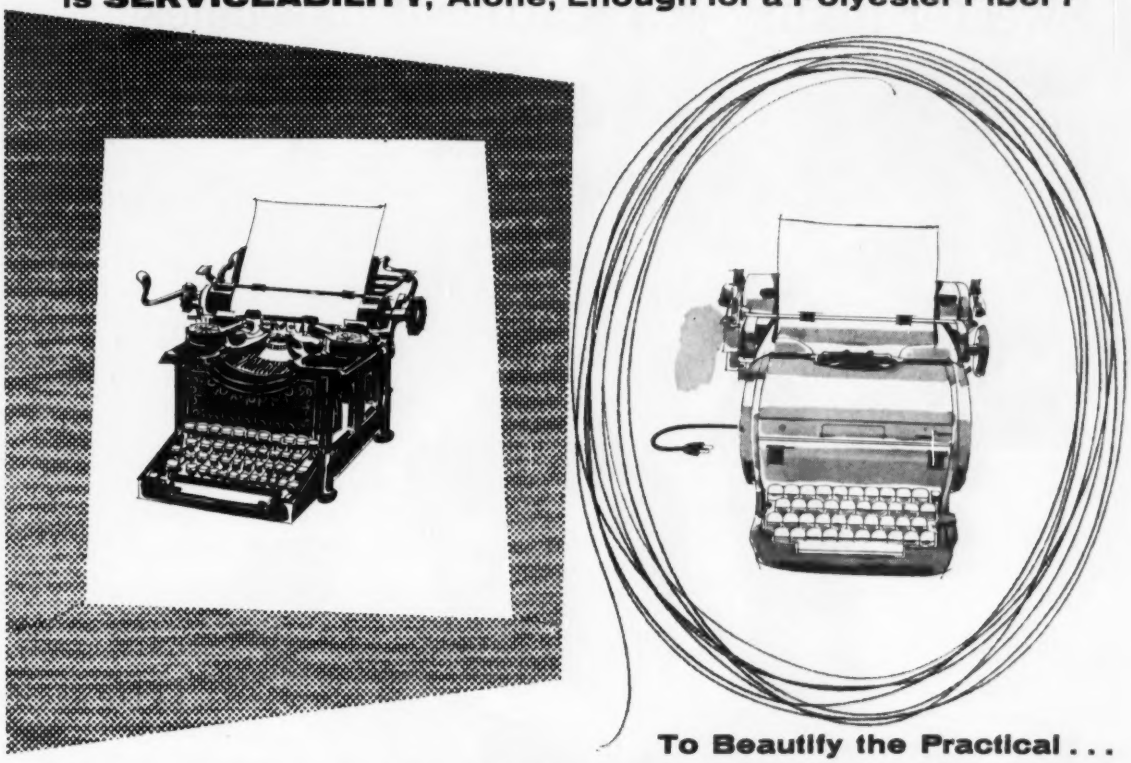
- Ideal for all wash 'n wear!
- Brightest . . . Whitest, whites!
- Excellent stabilization (less than 2% residual shrinkage)!
- Compatible with all wash and wear finishing additives!
- Widest range of hand!
- Maintains greatest tear and tensile strength!
- No complicated after wash!
- Highest order of resistance to acid souring!
- Highest percentage of solids!

Proved by millions of yards of plant processed fabrics. Write for an immediate mill trial.

ONYX CHEMICALS

ONYX OIL & CHEMICAL COMPANY
Jersey City 2, New Jersey

Is **SERVICEABILITY**, Alone, Enough for a Polyester Fiber?



To Beautify the Practical . . .

Vycron Introduces the **FIRST MAJOR BREAK-THRU** in Polyester Consumer Appeal!

Even the most utilitarian items, like typewriters, must have eye-appeal to attract today's consumers. ● In styled items like fabrics, beauty is even more important. Yet... according to our recent survey... 83% of consumers find wash-and-wear fabrics unsatisfactory from the aesthetic viewpoint. ● Now Vycron changes all that with heightened color beauty, finer hand and texture, unparalleled resistance to pilling, and greater pliancy and drapeability. Not only in wash-and-wear fabrics, but also in crease-resistant Vycron-wool blends, and decorative fabrics for the home! Nothing less will do for 1960!

● Fabrics labelled "Vycron" are Certified for quality and wash-and-wear performance by United States Testing Company.

AMERICA'S MOST ADVANCED SELF-CARE FIBER

Vycron National Advertising in 1960 will be carried to America's Millions in

Esquire	Glamour
Holiday	Harper's Bazaar
New York Times Magazine	Mademoiselle
Playboy	New Yorker
Sports Illustrated	Vogue
Life	

BEAUNIT MILLS, INC., Fibers Division, 261 Fifth Ave., New York 16, New York • Plant: Elizabethton, Tenn.

*Reg. applied for. Beaunit Fibers Division makes the fiber, not the fabric or garment.

Sweater luxury is a matter of molecules...

when it's nylon by ENKA

If you looked through a microscope, you'd discover why textured sweaters of Enka's nylon yarn feel so soft, fit so beautifully and are so much more luxurious.

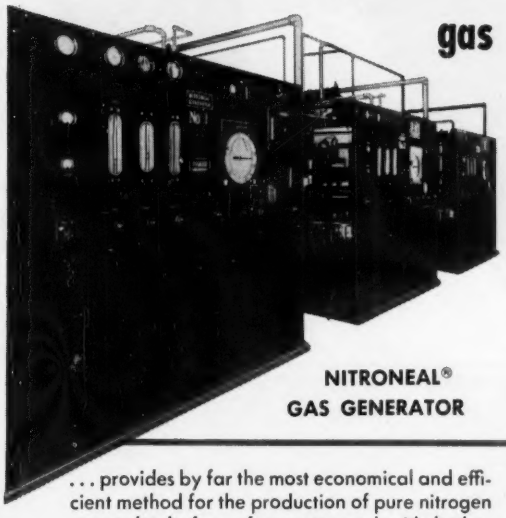
It's all a matter of molecules and of Enka nylon's different molecular structure. Enka nylon is produced on a continuous basis, creating yarn uniformity that cannot be matched by nylon yarn produced on a batch basis. Enka yarn has greater softness, absorbency and resiliency. *Softness* that brings the delightful feel of luxury to the wearer... absorbency that gives Enka yarn greater dyeability, gives you a greater variety of colors—all sharp, clear and uniform... *resiliency* that is so important to a sweater's active life.

Whether sweaters are your specialty or any other knit product containing textured nylon yarn, look into the outstanding qualifications of Enka nylon yarn. Learn about Enka's active, aggressive new Customer Service Program—featuring top national advertising, merchandising and publicity. Call A. B. Harris, Jr., Nylon Product Sales Manager in New York at OXford 7-6141, Ext. 26. Or—contact the Enka sales office nearest you.

SO MANY GOOD THINGS BEGIN WITH ENKA NYLON *Yarns*

American Enka Corporation 530 Fifth Avenue, New York 36, N. Y.
New York • Chattanooga • Greensboro • Providence Producers of Rayon • Nylon • Yarns • Fibers

for the most efficient production of oxygen-free gas



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GAS GENERATOR

. . . provides by far the most economical and efficient method for the production of pure nitrogen —*completely free of oxygen*—and with hydrogen content precisely controlled at any desired percentage between 0.5% and 25%. Nitrogen is supplied at a fraction of cylinder supply cost.

CHEMICAL DIVISION • 113 ASTOR STREET
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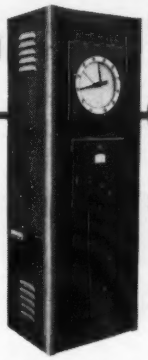
for indication of oxygen or hydrogen



The **MINOXO® INDICATOR** measures traces of molecular oxygen in other gases—from 1 to 10 parts per million, and from 1 to 100 PPM. High sensitivity and rapid speed of response enable it to be used for laboratory investigation and production quality control.

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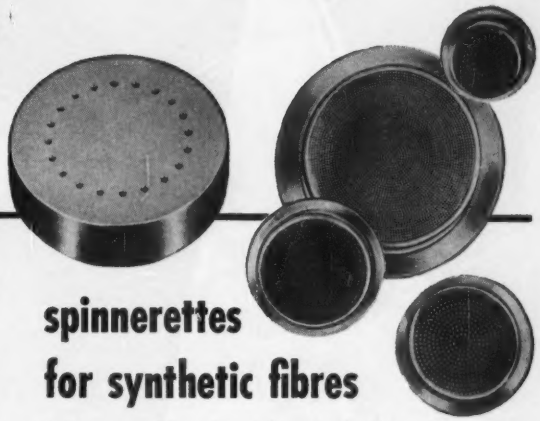

spinnerettes for synthetic fibres

Precious metal and stainless steel spinnerettes with rigidly controlled hardness and grain characteristics are available in standard and special designs. All surfaces are mirror-like, including walls of finest holes, for maximum protection against corrosion to assure trouble-free production. Write for "Spinnerettes" brochure.

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a complete line of platinum laboratory ware

All standard forms and sizes for chemical and physical purposes, made of platinum or any desired alloy. Line includes crucibles, reshapers, triangles, dishes, electrodes, anodes and cathodes. A catalog is available upon request. ★ ★

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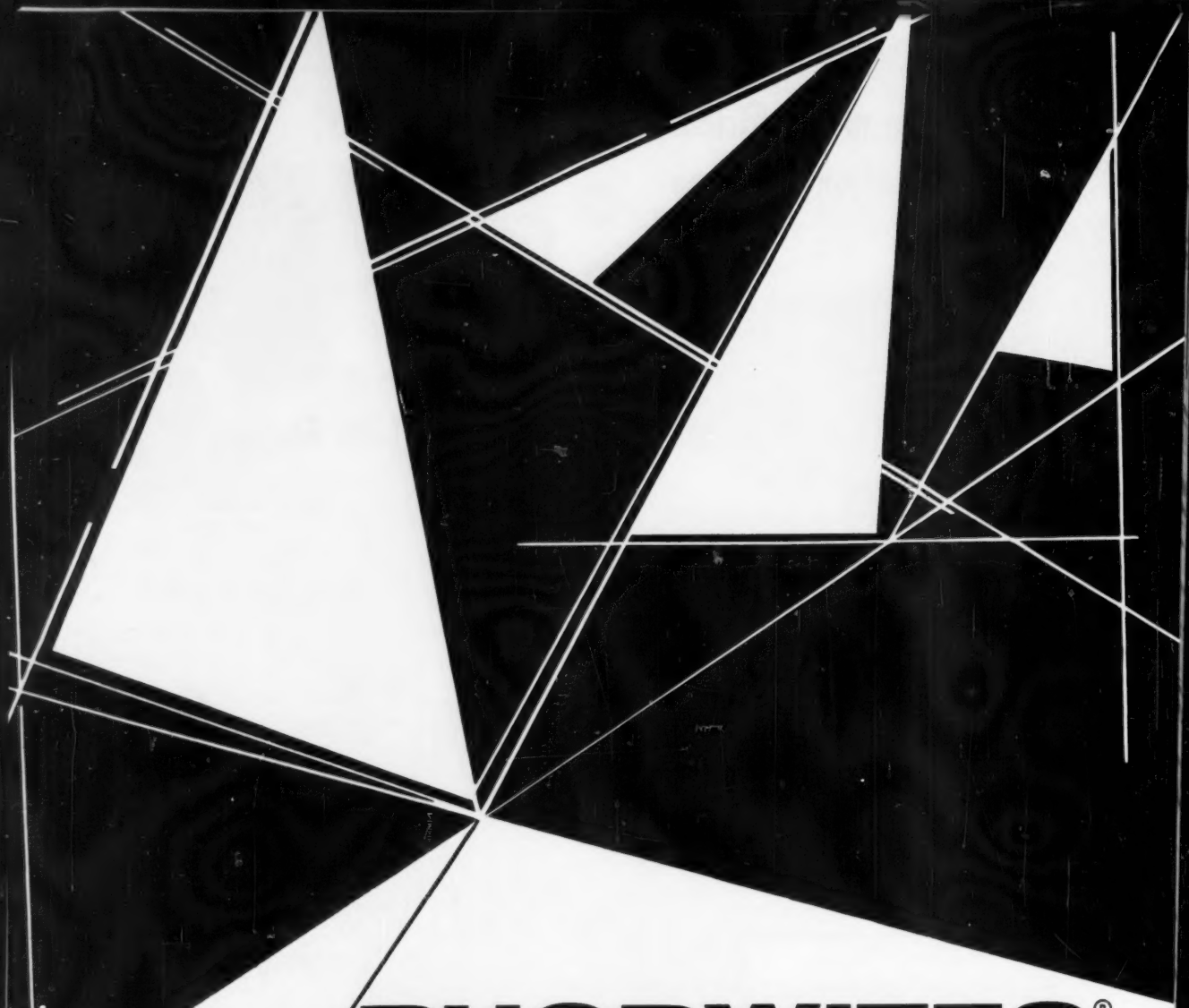

PHORWITES®

Optical brightening agents for clearest white effects

®**PHORWITE ACF:**
a bright neutral white mainly for acrylic fibers, stable in chlorite bleaches.

®**PHORWITE BBU POWDER: BBT Sol.: BBT Pdr.:**
for cotton and rayon, non-greying built-up, unsurpassed solubility.

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for cotton and rayon, outstanding leveling properties, for short liquor ratio applications.

®**PHORWITE WANS:**
most popular for animal fibers.

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IT'S COLOR-IFIC! COLORSPUN* RAYON and ACETATE

. . . in colors that rival the brilliance of the plumage of nature's most colorful creations. Like the bird of paradise, Colorspun fibers are born with the color sealed in for life—color is added to the solution before spinning the fiber. Resists fading due to water, sun, perspiration, fumes, etc.! That's why Colorspun fibers are used for fashions, homes, automobiles, industry!

COLORSPUN . . . RAYON STAPLE

1. BRIDAL ROSE
2. PALE PINK
3. SILVER GREY
4. SEA FOAM
5. CASCADE
6. SPUN GOLD
7. SANDALWOOD
8. BISQUE
9. CHAMPAGNE
10. SPICE BROWN
11. ROSEWOOD

COLORSPUN . . . ACETATE YARNS

12. FIREBIRD RED
13. DUSTY ROSE
14. AQUATONE
15. SPICE BROWN
16. NUTMEG
17. BISCUIT
18. DARK GREEN
19. AVOCADO
20. COPPER
21. BRONZE
22. GOLD
23. BLACK
24. LIGHT GREY
25. ROYAL BLUE

COLORSPUN . . . RAYON YARNS

26. NAVY
27. ROYAL BLUE
28. ULTRAMARINE
29. ORIENTAL BLUE
30. APPLE RED
31. ROSE
32. PALE PINK
33. TURQUOISE
34. IRISH GREEN
35. KELLY GREEN
36. SHERWOOD
37. TARRAGON
38. TRITON
39. SURF GREEN
40. GOLD
41. PALE LEMON
42. SPICE BROWN
43. HENNA
44. NUTMEG
45. BISQUE
46. BLACK
47. SLATE
48. NICKEL
49. CHAMPAGNE

COLORSPUN . . . SMOOTH RAYON CARPET STAPLE

50. CHESTNUT
51. BRAZIL
52. SANDALWOOD
53. SUN TAN
54. BEIGE
55. BLACK
56. DOVE GREY
57. SUN GOLD
58. TURQUOISE
59. JADE GREEN

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AVISCO®

Rayon • Acetate • Cellophane

AMERICAN VISCOSE CORPORATION, 350 Fifth Avenue, New York 1, N. Y.

COLORSPUN*

RAYON and ACETATE ARE EVERYWHERE

. . . in your clothing, in your home, in your car, in your electrical appliances and in the factories that supply your needs. In demand by manufacturers of all kinds, these forever-colorful fibers have hundreds of end uses. If you are not already using Colorspun, we would be happy to supply you with additional information.

COLORSPUN ACETATE

. . . used mainly in men's, women's and children's fashions:

- carcoat-linings
- draperies
- suit-linings
- coat-linings
- dress goods
- bathing suit fabrics
- men's socks
- umbrellas
- women's tricot lingerie

COLORSPUN FILAMENT RAYON

. . . enjoys much popularity for men's and women's apparel:

- linings
- shirtings
- dress goods
- decorative worsted yarns
- manufacturers' labels

. . . has many uses in home furnishings:

- draperies
- curtains
- slipcovers
- upholstery
- bedspreads
- throws
- tablecloths
- gift-wrap ribbons

. . . is a major item in automobile interiors:

- upholstery
- head liners
- upholstery trimmings

COLORSPUN STAPLE RAYON

. . . used by top makers of men's, women's and children's ready-to-wear:

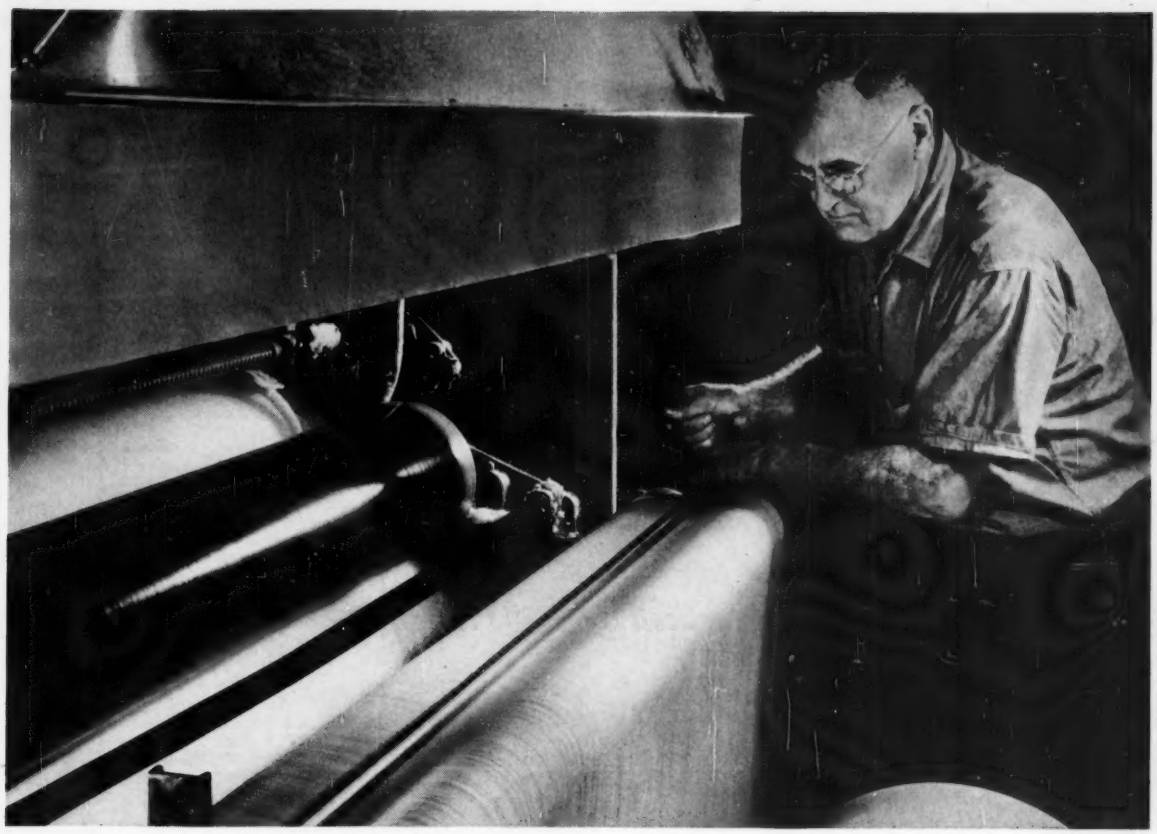
- interlinings
- dress goods
- suit goods
- men's hosiery
- men's t-shirts
- and airplane luggage

. . . is of major importance to the home fashion industry:

- carpeting
- draperies
- place mats
- upholstery
- bedspreads
- tablecloths

. . . is being used by the top automobile makers:

- upholstery
- window-channel fabrics
- convertible tops
- carpeting



How Modern Mills Improve Slashing Operations

Time after time, mills around the country report greatly improved slashing operations with TEN-O-FILM starches. Compatible with most adjuncts and available in a wide range of fluidities, TEN-O-FILM users praise its many unique operating advantages.

TEN-O-FILM is ready to use after cooking thirty minutes. Many mills find need for less plasticizer than with conventional starches. The stability of TEN-O-FILM keeps size usable despite prolonged heating and cooling. Size made with TEN-O-FILM does not congeal or "skin over" at lower-than-normal temperatures . . . it can be held for reasonable shutdown period without gelation.

TEN-O-FILM offers several additional features including unequalled clarity of film, economy in desizing and dyeing.

Our technical service group has had wide experience and marked success in adapting this versatile starch to the varied needs of many textile applications. The production advantages and process improvements achieved by TEN-O-FILM can be fitted to your needs by consulting our textile technicians. Contact our nearest sales office or write direct.

TEN-O-FILM® starches

Other fine products for the Textile Industry: EAGLE® • FOXHEAD® CLARO® • GLOBE® starches • GLOBE® and EXCELLO® dextrines

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"Acetacell" *"Novocell"*

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For the manufacture of Rayon and Acetate Textile Yarns, High Tenacity Tire Cords, Staple Fibres, Transparent Films, Plastics and other cellulose derivatives.

Quality — Uniformity — Reliability

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220 EAST 42nd ST. NEW YORK, N. Y., U. S. A.

MODEL 77 CONE

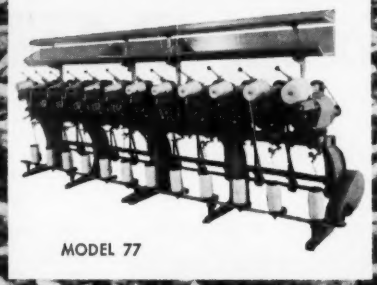
MODEL 78 CONE

MODEL 35 CONE

FOSTER MACHINES

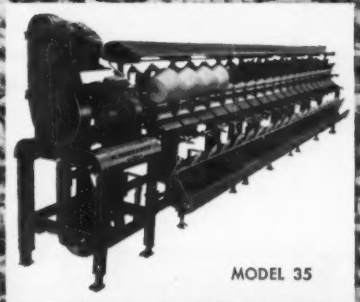
For Winding Tufted Textile Yarns

Let Us Recommend
the One Best Suited to Your Requirements



MODEL 77

MODEL 78



MODEL 35

Each of these machines is designed for a different situation. Each does a highly creditable job within its scope. Here are the details: —

MODEL 78 — This machine (built in 5 spindle units) produces 8" to 10" traverse, precise wind cones up to 16" in diameter and weighing up to 35 lbs. each. Ball bearing spindles are individually motor driven at speeds up to 800 R.P.M. It has controlled slow start and spindle brake, heavy duty belt gainer with hand wheel adjustment (or positive gear gainer, if desired), positive size stop, electric drop wire and expansion type cone holders, with handle control, for easy donning and doffing. Will wind overend from bobbins or from swifts, reels or unrolling devices.

MODEL 77 — Built in 6 spindle sections, produces 4" to 8" traverse, precise wind cones up to 10" in diameter and weighing up to 14 lbs. each. Ball bearing spindles, individually belt driven by one motor, run at speeds up to 1100 R.P.M. It has a positive, long wearing package brake and positive solid tapered pulley belt gainer. It will wind overend from bobbins, or from swifts, reels or unrolling devices. 90° build-up from face of cone prevents broken back or under-wound packages.

MODEL 35 — Built in units of 10 spindles to 80 spindles. Produces open wind 8" traverse cones up to 11" in diameter and weighing up to 9 lbs. each. Winding speeds from bobbins is from 180 to 250 Y.P.M. and from skeins 100 to 150 Y.P.M. Standard taper cone holders are 7° 22½′ and 3° 51′. Package brakes and disc waxing attachments are extra. Can be equipped to wind from swifts, etc. as well as from bobbins.

Write for Model 78 bulletin A-98A, Model 77 bulletin A-99, or Model 35 bulletin B-46A.

FOSTER MACHINE COMPANY

Westfield, Massachusetts, U.S.A.

ATMA
American Textile Machinery Exhibition - International
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ATLANTIC CITY, U.S.A. MAY 22-27, 1960

Southern Office, Johnston Bldg., Charlotte, N. C. Canadian Representative, Ross Whitehead & Company Limited, 2015 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ont.

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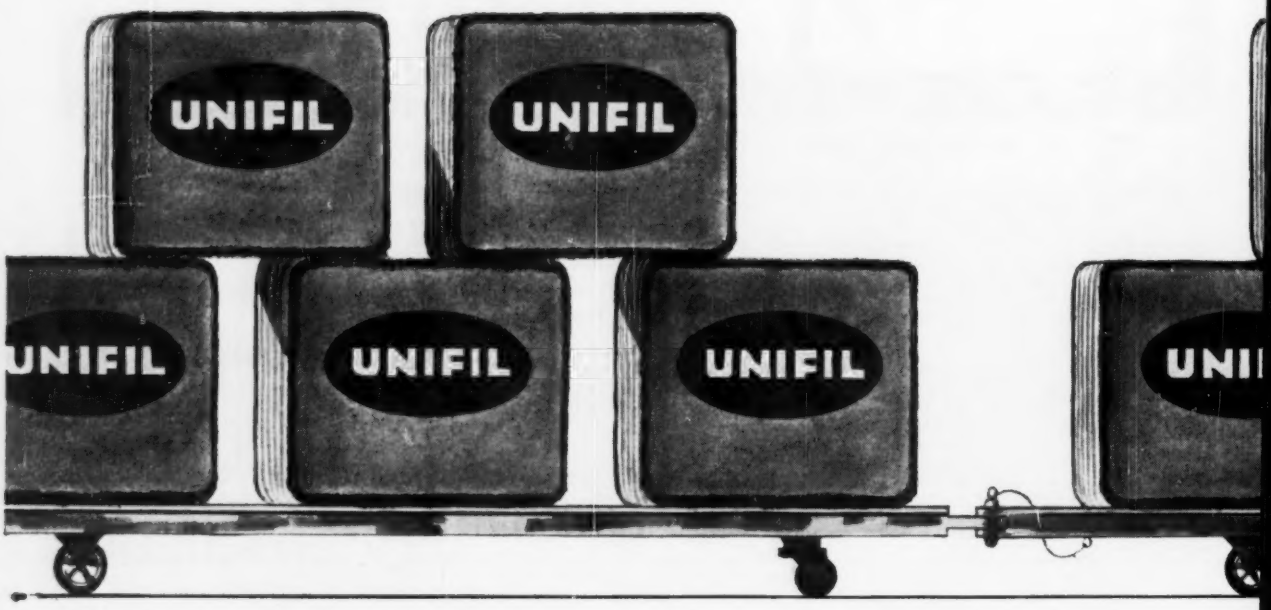
138-9

Thousands On Their Way ...Helping Mills



The outstanding versatility and uniformity that UNIFIL® Loom Winders provide are enabling mills everywhere to enter markets they never even considered before! With cotton, synthetic or textured yarns, progressive mills are producing fabrics in an almost limitless variety of hand, patterns, and surface effects. And . . . they're doing it with maximum economy of operation.

Initial step toward wider markets in many of these mills was a comprehensive study of filling yarn preparation methods, using the Leesona "Profit Factor Analysis." This thorough examination of methods and equipment carried out by Leesona Engineers showed precisely how UNIFIL Loom Winders could increase the scope of weaving operations as well as reduce production costs and improve quality. Very often analysis results proved conservative compared to actual performance. Most mills *reordered*.

UNIFIL Loom Winders can provide all the advantages of weaving-from-the-cone in *your* mill — by bringing the entire process of filling yarn preparation to the loom. They'll greatly improve the quality of fabrics woven from fine yarns . . . give fabrics with textured yarn filling a uniformity not possible before. Let a "Profit Factor Analysis" show you how UNIFIL can help your weaving operations. Ask your Leesona Sales Engineer in Boston, Philadelphia, Charlotte, Atlanta, or Los Angeles. In Canada: Montreal or Hamilton. Or write Leesona Corporation, P. O. Box 1605, Providence 1, Rhode Island.

Here are just a few of many modern mills which are saving with UNIFIL Loom Winders:

J. P. STEVENS & CO., INC.
BURLINGTON INDUSTRIES, INC.
PONEMAH MILLS
DRAYTON MILLS, INC.
JUDSON MILLS
UNITED MERCHANTS & MFRS. INC.
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FRANK IX & SONS, INC.
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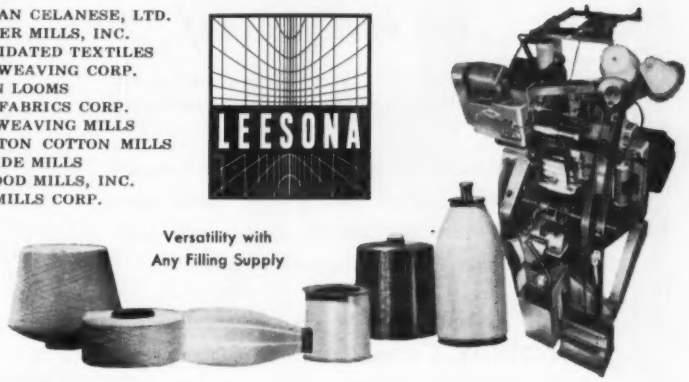
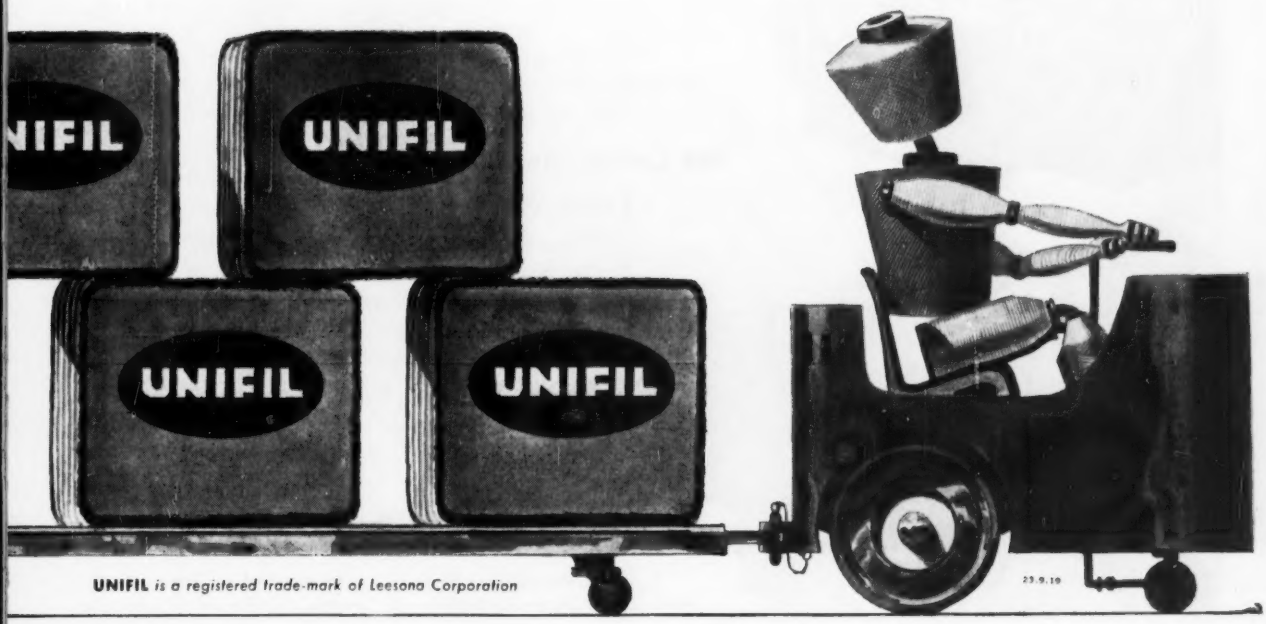


Expand Markets



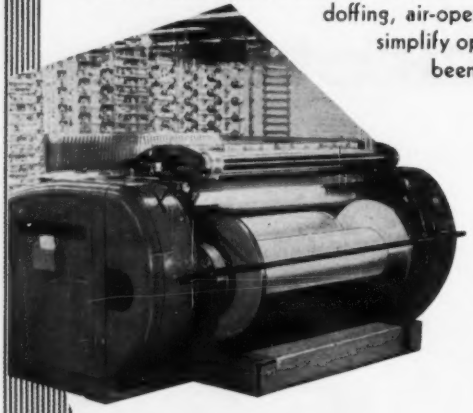
UNIFIL *is a registered trade-mark of Leesona Corporation*

15 of the World's Leading Man Made Yarn Producers use COCKER Warping Equipment *Exclusively*

To be completely accurate: These mills have installed a total of 8 competitive warpers for comparative purposes . . . against a total of 205 Cocker Warpers.

Since 1950 Cocker has installed about three times as many warpers as the next leading make. Today most of the world's leading producers of man made fibers now use Cocker Warping Equipment Exclusively.

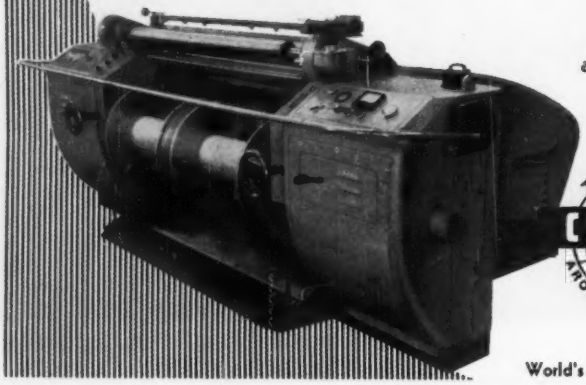
• **For Production.** Rugged construction and accurate controls permit maximum sustained speeds • **For Versatility.** Cocker Warpers are engineered with an eye to the future, with advanced features to meet the needs of tomorrow as well as today • **For Convenience.** Sensitive and accurate controls, indicators, air doffing, air-operated presser rolls, powerful brakes, and many other features greatly simplify operation • **For Economy.** For over 50 years Cocker equipment has been famous for its sound engineering, long service and low operating costs.



Whatever your warping requirements may be, there is a Cocker Machine which will do the job faster and better. Here are two examples:

The Cocker Model SD-49 Warper (left)

Designed especially for synthetics but will handle any type yarn. Produces unexcelled synthetic warps from finest deniers to heaviest tire cord yarns. Takes section beams with flanges up to 40" diameter. Produces warps of any desired density at speeds up to 1000 yds. per minute. Driven and braked from both ends.



The Cocker Multiple Beam Tricot Warper Model MB55-32 (below)

Will handle 2-21" beams, 1-42" beam, 1-50" or 1-55" Raschel Beam with simple changeover from one set-up to another. Individual controls are in full view and easy reach. Has all modern features and safety devices. Normal sustained speeds up to 600 yds. per minute.

Write for full information today.

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THE LEADER COCKER AROUND THE WORLD

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World's Largest Designers and Builders of Complete Warp Preparatory Equipment

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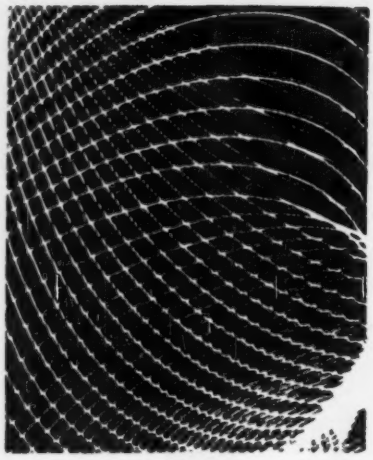


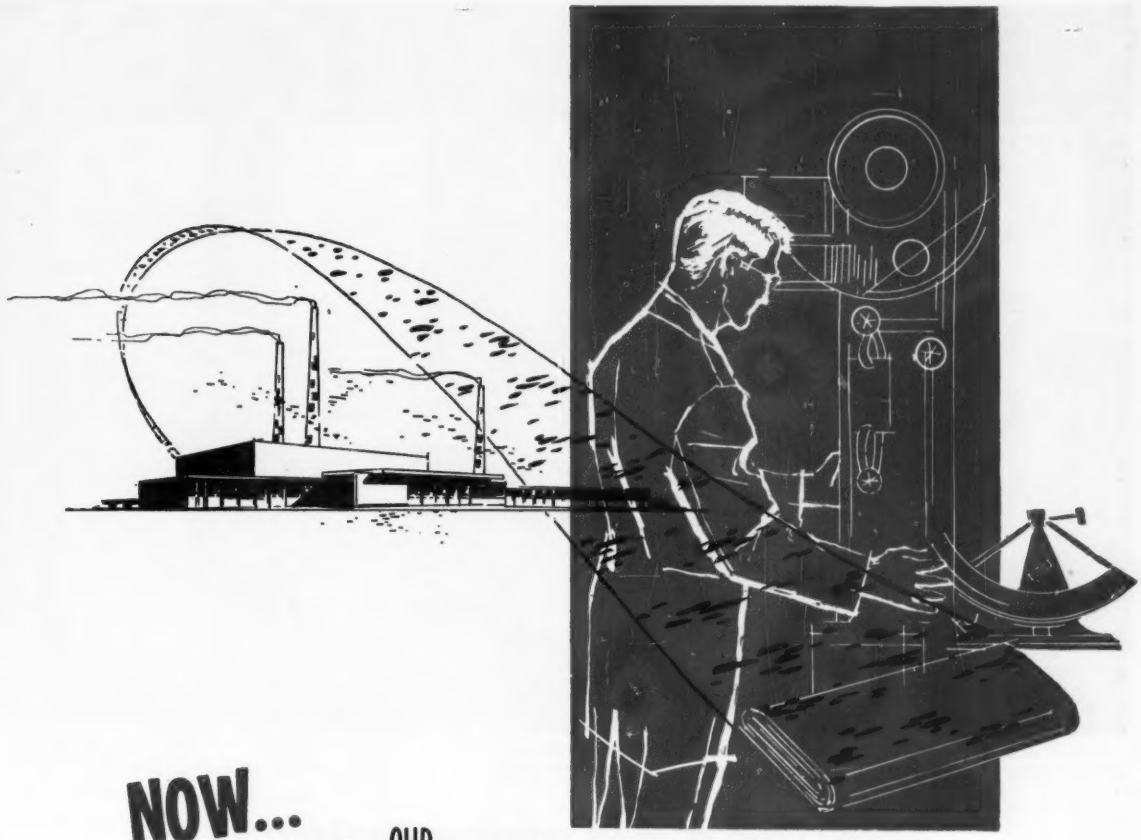
DRAWTWISTERS for the Synthetic Fiber Industry

Since the inception of the synthetic fibres industry, over 14 years ago, Dobson & Barlow Ltd., Bolton, have designed, developed and manufactured—in close collaboration with the industry—drawtwisters for synthetic fibres, embracing cold and hot drawing processes for both light and heavy denier yarns.

Dobson & Barlow Machinery Sales Ltd. are happy to accept enquiries for light, heavy and all special purpose drawtwisters —and hold, at the Industry's disposal, their widely-known technical and advisory service.

DOBSON & BARLOW MACHINERY SALES LTD.
BRADLEY FOLD WORKS, BOLTON, ENGLAND

D&B



NOW... not only OUR products, but also our CUSTOMERS products are LABORATORY TESTED

The finishing plant without specific facilities for testing resin-treated fabrics can now maintain quality and be assured of meeting specifications.

Samples for all lots finished with our line of thermo-setting resins may be sent to our TEXTILE TESTING DIVISION. Complete test reports will be furnished promptly to the mill, together with suggestions for any necessary improvement in quality.

This is just another facet of our CUSTOMER SERVICE PROGRAM, available to all formulators of crease-resistant, "wash-wear", schreinered, embossed, and glazed finishes.

Send for samples of our resins together with mill-tested finishing formulae, and let us send you a sample report on your test runs.

HARTOSET E—A highly stable and efficient monomeric etherified urea resin, giving excellent stabilization and soft hand.

HARTORESIN B—A stable polymeric etherified urea resin for stabilization with crisp hand.

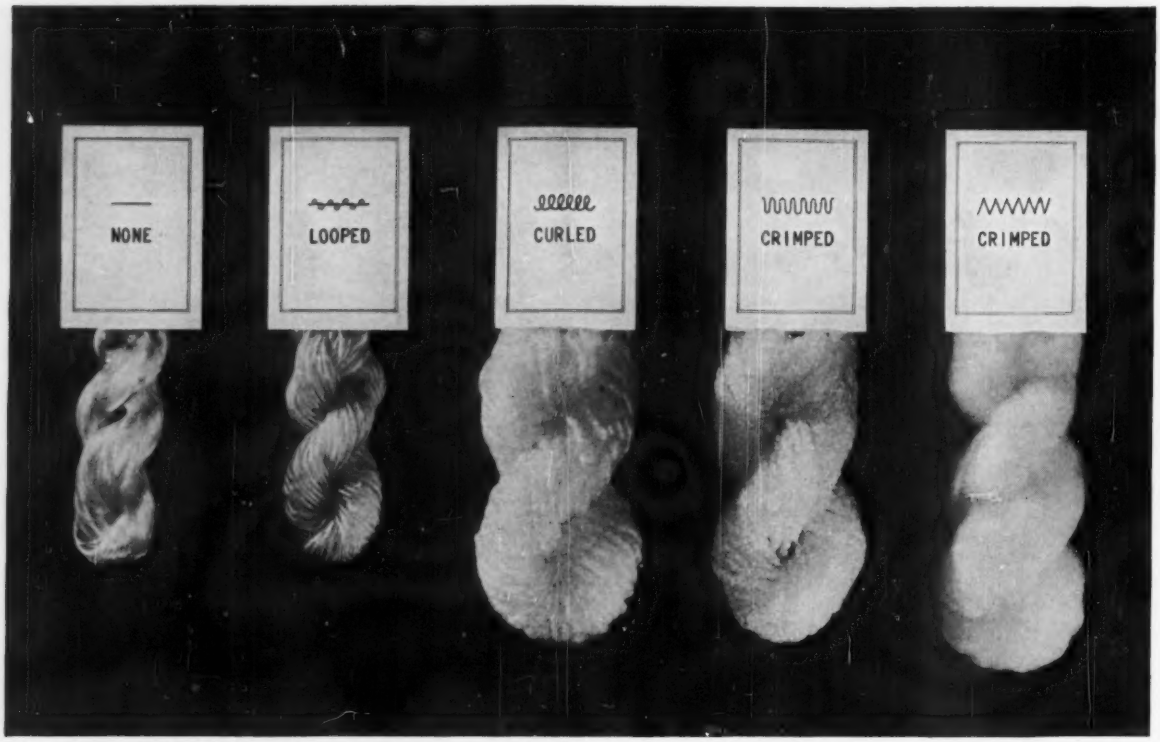
HARTORESIN NV—A stable polyvinyl acetate emulsion for adding body to resin finishes.

HARTOSET F60—A crisp, flame-retardant finish for nylon nets.

the Hart Products Corporation

1440 BROADWAY, NEW YORK 18, N. Y.

Works and Laboratories, Jersey City, N. J. Hart Products Company of Canada, Ltd., Guelph, Ontario



60 yards of Caprolan 2100-112-0-0-HB heavy yarn which has not been textured.

Same weight, same yarn textured by looping.

Same weight, same yarn textured by curling.

Same weight, same yarn crimped by one process.

Same weight, same yarn crimped by second method.

Textured filament nylon?... What a Difference Caprolan* Makes!

Take a Look at How Caprolan Responds to Four Popular Bulking Processes!

The left-hand skein is simply 60 yards of our 2100-112-0-0-HB heavy yarn which *has not* been textured by *any* method. To its right are four skeins of the same weight of the same yarn bulked by looping, curling and two methods of crimping.

These textured yarns of Caprolan tell their own story!

If you are a producer of carpets, upholstery fabrics, decorative textiles, industrial fabrics or military goods, textured filament yarns of Caprolan open a whole new world of fabric engineering and design opportunities for you. Used alone, or in combination with each other, textured yarns should hold a high priority in your future fabric plans.

When ordering textured filament nylon yarns, specify Caprolan, which has all the advantages of nylon plus a number of extra, important performance values!

For further information, technical assistance or list of sources, write us today.

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caprolan®
THE NYLON FIBER BY ALLIED CHEMICAL

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MODERN TEXTILES
Magazine

Publisher's Viewpoint

For 1960: something new for our readers

The textile industry, particularly that section of it devoted to manmade fibers, is characterized by a rapid flow of events, by frequent changes and innovations. In part this is due to the fact that textile products are largely tied up with fashion, and the essence of fashion is change; in part to the rapid appearance, one after another, of new manmade fibers bringing with them new opportunities and new problems; and in part to the increasing competition within the industry caused in turn by the appearance of these new fibers, and the constant improvement of established fibers.

Whatever the cause——change, rapid and ceaseless, is part of the air we breathe in textiles. Here at Modern Textiles Magazine we regard it as part of our function as the source of up-to-the-minute information on manmade fibers and their uses—and indeed all other aspects of textiles—not only to keep up with the whirl of change but to anticipate it and report its probable direction and consequences.

Something New for Our Readers

For these reasons, we are making some changes of our own—innovations and renovations of editorial content which we believe will help our readers greatly.

Beginning with our January issue we will offer a series of new editorial features. The first of these will be a report on new trends in the use of manmade fibers in home furnishing fabrics timed to coincide with the January Home Furnishing Market in Chicago.

In our June issue, at a time when the womenswear market is crowded with retail buyers and interest in womenswear fashions is at a fever pitch, we shall bring out a report for millmen and converters on the new trends in fabrics intended for the womenswear trade.

In November we plan to publish an up-to-the-minute analysis of opportunities for profit in fabrics for industrial use.

Along with these new features, there will be rebuilt and freshly repainted a number of other editorial functions of great timeliness. In May we will bring out an issue largely devoted to a preview of the American Textile Machinery Exhibition—International to be held May 23-27 in Atlantic City by the American Textile Machinery Association.

Better Than Ever

In September, we will put a brighter luster than ever before on our annual grand review of the manmade fibers industry with special emphasis on new fibers and changes and improvements in established fibers along with a summary of new capacity planned or newly built by the manmade fiber producing industry.

Our September issue will also include an advance report on the 21st biennial Southern Textile Exposition to be staged October 3-7 at Greenville, S. C. And our annual listing of filament counts and denier numbers, so long a feature of our September issue, will be presented in 1960 on specially enlarged and easy-to-consult tables.

These editorial improvements and innovations, we believe, will make our magazine more useful than ever to our readers. Our advertisers too will benefit, since greater reader usefulness means for them a bigger response to their advertising messages.

This expanded editorial coverage has been made possible, we wish to emphasize, by the growing recognition in the textile industry achieved steadily by Modern Textiles Magazine—a recognition which has given all of us on the staff great satisfaction and a warm sense of gratitude toward advertisers and readers—both of whom are increasing, we are happy to say.

A. H. McCullough

OUTLOOK *in textile marketing*

Want to Get Into Fiber Marketing?

Currently the textile industry is experiencing a new wave of appearances of new fibers. There are the new polyesters including Eastman's Kodel, Beaunit's Vycron, and, still in the development stage, Celanese's Teron.

Hard on the heels of these new polyesters was the announcement in recent months of a new cellulosic and "polynosic" fiber, Zantrel, by Hartford Fibres Corp., and two new polypropylene fibers, Prolane of Industrial Rayon Corp., and Olane of AviSun Corp., an outfit owned jointly by American Viscose Corp. and Sun Oil Co.

Also among the newest new fibers to be launched commercially are two in the elastomeric or spandex (to use the approved generic name) category. One of these segmented polyurethane snap-back filaments is DuPont's Lycra, formerly known as Fiber K. The other is Vyrene of U.S. Rubber Co.

Behind the announcement and naming of so many new fibers lies a great deal of hard work in basic research; in development and testing of a usable commercial product. In many cases, the work of research and development has extended over years, and total costs must be reckoned in many, many millions of dollars.

In spite of all the work already done, there lies ahead for these new fibers still more hard work—in many ways more demanding, more nerve-shattering and arduous than the work already finished.

This difficult job that lies ahead is the herculean task of marketing the new fibers. Some revealing insights into the complexities of marketing a new fiber were afforded recently by a knowledgeable and articulate fiber marketer who has been through the mill. In a talk before the Chemical Market Research Association, R. L. Churchill of Eastman Chemical Products, pointed out that the task of marketing a new fiber is far more difficult than it was 20 years ago.

In those good old days, fiber producers, making rayon and acetate, were basically chemical companies offering raw materials to weavers and knitters. They had little if anything to do with the segment of the textile trade beyond the weaving and knitting level.

The fiber producer in those days, Churchill said, bent all his efforts to supplying a product of the best possible quality at competitive prices. He depended primarily on the weaver or the finished goods producer to design, market and merchandise fabrics employing his fiber in end uses to which it was best suited.

But today all this is changed. In bringing out a new fiber, the fiber producer, Churchill said, must include in his marketing plans "the operations interests and motivations of all segments of the trade between him and the ultimate consumer."

He must face up to the expensive and unpleasant reality that it will be necessary to establish his brand name with consumers in those end uses he is planning as long-range outlets.

Such a program requires heavy and very expensive advertising stressing retail "success stories." The fiber producer must pick manufacturers whose products are well known to the public and whose prestige will help the new fiber off to a good start.

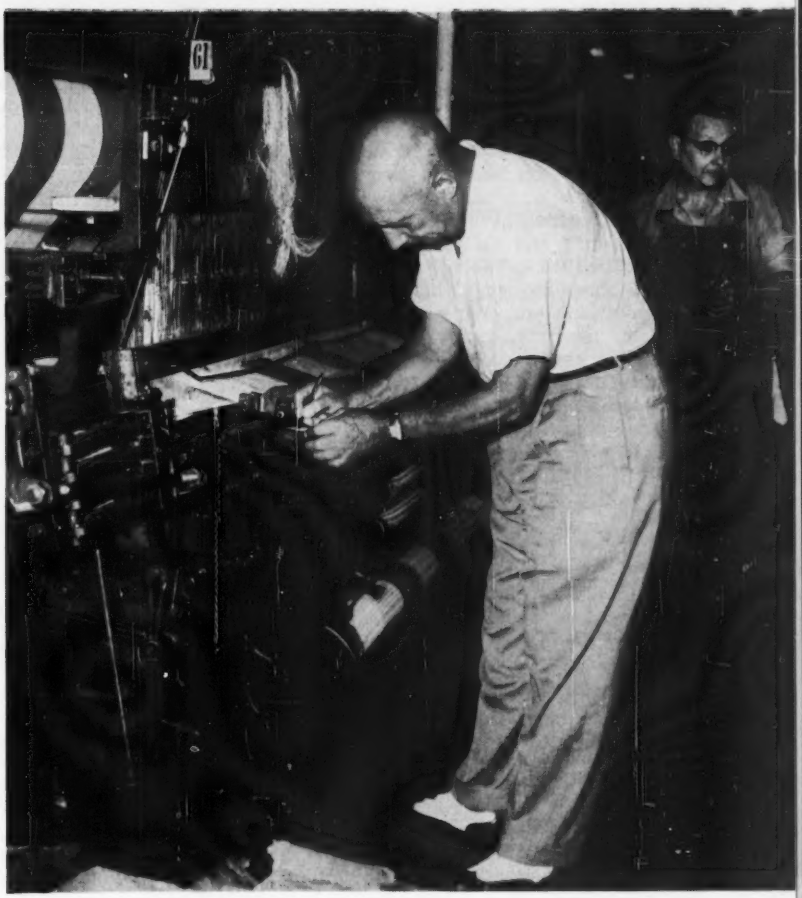
And the irony of all this, said Churchill, is that the fiber producer who is spending those big gobs of advertising money has in fact little control over the end product carrying the expensive brand name he is trying to establish.

Trying as all this may be, the fiber producer, Churchill said, has no other way out. No one else is interested in promoting his fiber for him.

Thus, if he wants to get off the ground with his new fiber, already loaded with millions of dollars of research, development and plant building costs, he has to undertake today's complex marketing task, with all the work and expense it entails, and hope that at some time, he will have some profit left.

At the beginning and for quite a while the figures will be all red, not black. "Whether you ever get on the profit side of the ledger depends on what your competition has done and will do to combat your program and also a lot on just old lady luck."

By Jerome Campbell
MODERN TEXTILES MAGAZINE



STYLIST AT WORK—R. H. Rabbitt, in charge of Jordan's upholstery fabrics, works out his own new styles on several looms reserved for his use in the weave room.

two men

two markets

keep JORDAN MILLS humming

UNDER THE LEADERSHIP of two remarkably able men of diverse talents and personalities, Jordan Mills of Columbus, Ga., has earned itself a unique position in the textile world. The two men are R. Curtis Jordan and R. H. Rabbitt, widely known throughout the upholstery trade as "Bunny" Rabbitt. Jordan's unique position is that of a relatively small but highly respected and agreeably profitable manufacturer of two diverse textile lines—sales yarn for the knitting trade, and fancy upholstery cloths for the furniture and allied industries.

In both departments Jordan Mills is looked upon as a pioneering leader in bringing out new and pacesetting products. Jordan's knitting yarns, all of which are dyed, are sold largely to the menswear knitting industry with some yarns going into womenswear. Jordan has been a pioneer in spinning and dyeing to brilliant shades yarns of the newer fibers such as Du Pont's Orlon, Chemstrand's Acrilan and such still newer yarns as Goodrich's Darvan and Dow's Zefran. "We are a specialty mill, making specialty yarns and fabrics," Curtis Jordan says.

The upholstery department, which is the special activity of "Bunny" Rabbitt, is an acknowledged style leader. In its weaving of upholstery cloths, Jordan functions as a producer of novelty and specialty fabrics for furniture manufacturers who want something new and different, something that is ahead of the crowd. "We operate a custom-tailoring shop for upholstery fabrics," is the way Rabbitt explains it.

Jordan's evolution to its present eminence in its two specialties has been a progress by trial and change. The beginnings go back to 1905 when Curtis Jordan's grandfather, G. Gunby Jordan and Charles L. Perkins established a mill for knitting men's cotton hosiery. Gunby Jordan was a man of extraordinary energy and business acumen—a man still remembered as one of the pioneers in the growth of the "new South," a South of forward-looking industrialization that arose from the ruins and chaos of the Civil War. Born in Sparta, Ga. in 1846, Gunby Jordan was one of the youngest soldiers in the Confederate Army, enlisting as a boy of 15 and serving

with distinction as an aide and messenger for the famous cavalry leader, General Fitzhugh Lee.

When the war ended he was 18 years old and in need of a job. He learned that there was an opening at the Eagle & Phenix Mills for a bookkeeper and he hastened to offer his services. To qualify, he took a month to bone up on the skills of bookkeeping, and he got the job. In time, he rose to be president of Eagle & Phenix, and one of the most widely respected leaders of the Southern textile industry at the turn of the century and for many years thereafter until his death in 1930 at the age of 84.

The Perkins Hosiery Mills was a side venture of Gunby Jordan—one of his many interests in textiles outside of his main duties as head man at Eagle & Phenix. Perkins served as president of the hosiery mill until his death in 1922. He was succeeded by R. Curtis Jordan, Sr., the present Curtis Jordan's father.

Curtis Jordan, Jr., born in 1917, was educated at the University of Virginia and Philadelphia Textile School. In 1937, he went to work for the Perkins mill whose name about that time was changed to Jordan Mills.

The company moved into upholstery manufacturing more or less as the result of a chain of accidental developments. In 1932, during the bad years of the depression, the mill management had leased space to an upholstery weaving operation which in time faltered and shut down. Its looms were taken over by Jordan Mills and put back into operation.

It was about that time, that "Bunny" Rabbitt came into the Jordan picture. Rabbitt, who is now 54, had been active for years in the upholstery fabric business as a successful jobber and mill sales agent. In 1932 or thereabouts, he added to his accounts the line of Jordan Mill's upholstery fabrics. At that time it was not a big line. Rabbitt recalls that his first samples came to him from Curtis Jordan, Sr., packed not too tightly in a shoe box. It consisted of two colors then widely popular as staples of the furniture trade —rust and green.

Rabbitt from his headquarters in Chicago soon was shooting down to Columbus new styling ideas for Jordan's upholstery cloth output. From time to time, in his wide traveling, he visited the mill and established a cordial and profitable relationship with Curtis Jordan, Sr. The upshot of this business friendship was that in 1934, Curtis Jordan, Sr., impressed by Rabbitt's abilities and abundant energy, asked him to come to Columbus and take charge of the mill's growing upholstery department.

He came and has remained ever since both to his own profit and satisfaction and the profit and satisfaction of Jordan Mills. Over the years, he has managed the styling, production and selling of Jordan's upholstery cloths, doing a great deal of traveling to call on customers—a practice he still carries on even though the sales force for the upholstery department has grown to substantial proportions.

In 1946, the Jordan management, finding the men's hosiery business hopelessly unprofitable, liquidated its progessively declining hosiery operation and moved steadily into sales yarn manufacture to complement its thriving upholstery fabrics department.

Today with sales volume running at $7 million, Jordan Mills is in every way an admirable example of a medium-sized textile outfit equipped with both the management and the plant needed to compete successfully with bigger, slower-moving companies in the industry. The mill in Columbus has been extensively modernized in recent years both in the sales yarn departments and the upholstery fabrics sections.

Both Curtis Jordan and "Bunny" Rabbitt are in agreement that the continued prosperity of Jordan Mills depends upon its ability to function as a "specialty" producer. "As long as we can come up with new yarns and fabrics that 'hit' right, we will do well," Curtis Jordan puts it. And Rabbitt says that the secret of Jordan's way of doing business in the upholstery fabrics line is to combine advanced and successful styling with vigorous selling based upon a close knowledge of what the furniture manufacturers want now and will want next season.

For both sales yarns and upholstery fabrics, Jordan offers short runs, a variety of colors and styles and quick deliveries. The upholstery cloth department normally delivers goods within three to four weeks of receipt of orders. For special rush orders deliveries are sometimes made in far less time—sometimes within three or four days of receiving the order. Jordan does not weave for inventory but only against orders actually received.

(Continued on Page 60)

WORK UNDER PRESSURE—Shown at left are some of the modern pressure chambers in use in Jordan's dye house, a key department in its function as a producer of colored sales yarn.

Advantages of factoring cited

Today's economic climate favors factoring's growth, Popma says

By the Editors

THERE'S a great future ahead for factoring in the textile industry in the opinion of Gerrit J. Popma, president of Texitle Banking Co., which this month celebrates its 40th anniversary. Popma believes that the financial and economic climate in textiles is steadily turning more favorable for the increased use of factoring as a tool of efficient business management. He sees this trend continuing, even accelerating in the coming decade.

He and his associates are determined to make the most of this expected turn in the economic weather by winning a growing share of the available business for their firm which already is the largest company in the United States whose business is confined exclusively to factoring.

A soft-spoken wonderfully persuasive man, Popma is apt to begin every discussion of his firm's activities by establishing clearly what he and his firm means by factoring. "Factoring," he explains, "is the outright purchase of a client's accounts receivable for cash. It is," he reiterates, "a purchase," and Textile Banking, having made the purchase has no recourse against its client if the purchased account should fail to pay. This rarely happens, of course; and one of the reasons why it rarely happens is the fact that Textile Banking, as the factor, has the right to check the credit of the client's customer before the client makes the sale that results in an account receivable being sold to Popma's firm.

Popma finds is necessary to emphasize that Textile Banking is a factor who buys accounts receivable outright because, in recent years, this classic or "Old Line" definition of factoring has been broadened in practice to cover other forms of commercial financing in which accounts receivable are accepted as collateral for loans.

The greatest advantage of factoring for a mill or converter, Popma says, is that it provides such firms with quick payment for goods sold. Thus they are able to obtain far more use from their working capital than they would get if they waited for their customers to pay them at the end of sixty, or ninety days or even longer periods of payment which competition more and more forces some manufacturers to grant.

There are other and, in Popma's opinion, equally important advantages to be derived from factoring by a textile manufacturing concern. A company that factors its accounts receivable does not have to maintain a credit department—its credits are checked by the factor. Similarly, the factor undertakes to do a certain amount of bookkeeping in that it posts sales and payments and makes collections for the client.

Gerrit J. Popma

The expense of these services assumed by the factor is thus a clear saving for the client—and not an inconsiderable one, Popma likes to point out, in these days of mounting costs for both clerical help and the space to house them while they are working.

So important is this administrative aspect of Textile Banking's services to its customers that as much as 40% of its volume is represented by this "maturity factoring"—factoring of accounts of companies who are satisfied to leave the money paid by Textile Banking for their accounts receivable in the hands of the factor until the maturity of the receivables.

Popma notes that customers who avail themselves of such "maturity factoring" and who use Textile Banking purely as "credit specialists" are growing not only in textiles, where Textile Banking does about 75% of its volume, but in furniture, electronics, plastics and steel fabricating where in recent years the firm's business has been spreading.

Essentially, however, Popma stresses, factoring as offered by Textile Banking, is a service aimed at aiding companies whose sales growth is outstripping their capital growth. It is thus a service that appeals

to young, dynamic, aggressive managements anxious to force a maximum pace of growth and knowing that unless such a pace of expansion is maintained in these days, their enterprises may slip back and fall out of the competitive race entirely.

To give such firms a steady flow of useful cash so that they can make the most of their capital in the face of opportunities available for more business is the classic function of the factor. And it is the function that experienced, enthusiastic factoring leaders like Gerrit Popma like best to perform. The knowledge that they are helping ambitious, able business men to push ahead is rewarding to them.

There are other advantages to factoring, Popma points out—beneficial side effects, so to speak. A manufacturer who turns to factoring often finds that the calibre of his management effort is greatly improved. Working with an experienced factor, the client is given insights into good managment and accounting practices that he may never have known before; or knowing about them, may have not bothered to observe.

When a manufacturer avails himself of the services of a factor, Popma says, it is like adding an invisible but valuable consultant to its management team. From its factor, a client thus often is given insights into how other companies manage—insights that broaden his point of view and bring him to the enforcement in his own company of improved business practices.

Popma believes that the charges a client pays for factoring services are small, virtually nominal, in the light of the values he gets in return. To begin with, the client puts his business on a basis, giving him a rapid flow of working capital to use as effectively as possible—a service whose value is hard to measure in terms of dollars-and-cents fees. The value the client obtains from the fact that his business is on a cash basis is limited only by his resourcefulness in making optimum use of the capital factoring places in his hands.

More subject to measuring is the savings obtained by the client by the reduction of administrative expenses when it factors its accounts. These savings include credit checking and ledgering its accounts receivable and collecting payments when due.

In an age of increasing specialization, Popma believes, factoring is bound to be more and more utilized. He sees a day not far distant when virtually all textile manufacturing and converting firms will make use of factoring. He likes to point out that once every big department store maintained its own delivery trucks and was proud when they rolled through the streets and up to the customers' doors with the store name blazoned on their sides. Such fleets of trucks were undoubtedly a great prestige element for each big store, but in time they turned out to be too expensive.

Nowadays the biggest and most exclusive department stores, as a matter of course, have their merchandise delivered by United Parcel Service, and are extremely glad that they no longer have to buy, man, service and garage the trucks. And no one can say that each store's customers think one whit less of its merchandise because it is delivered by a common carrier.

That's the way it is with factoring, Popma says. More and more companies are finding out that they do not have to maintain their own credit and collection departments. An experienced factor such as Textile Banking can handle these tasks for them—and greatly to their advantage with no loss of prestige. In fact, Popma says, many firms find that their customers' opinions of them rise sharply when they turn to factoring.

With the trend of the times thus favoring factoring, Popma sees ahead a decade of growth for his company. By December, 1969, when Textile Banking observes its 50th anniversary, he is hopeful that it and its subsidiaries, T. B. C. Associates, Inc., of New York City and Texbanc, Inc., of St. Louis will be doing in excess of a billion dollars annually.

HIS & HERS—Knitted by Boepple Mills of Du Pont's new Orlon 21, these sweaters have good elasticity and shape holding qualities.

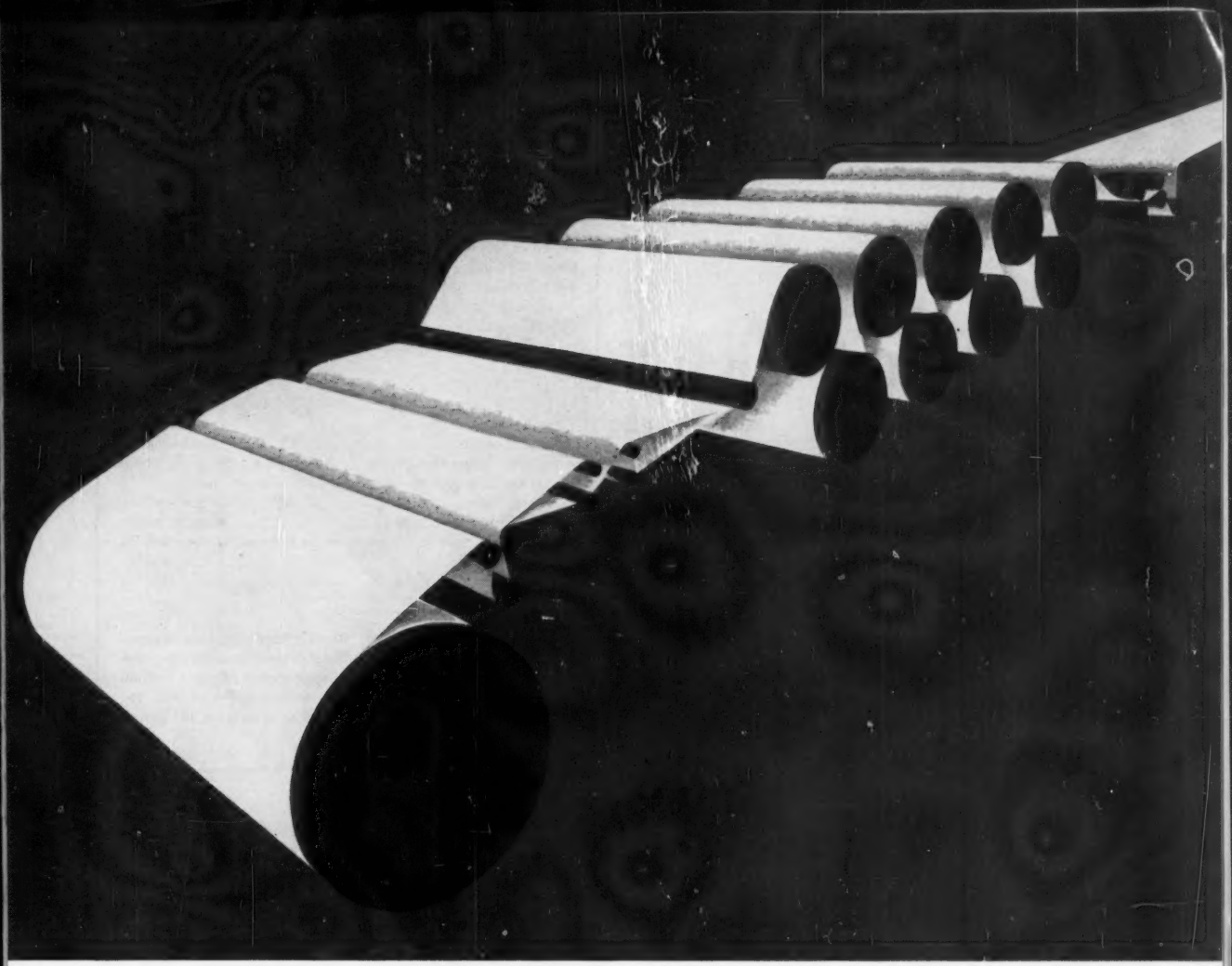
Leesona Acquires Holt

Leesona Corp. (formerly Universal Winding Co.), Cranston, R. I., has acquired Thomas Holt Ltd., manufacturers of textile machinery in Rochdale, England. The English firm will operate as a subsidiary. Leesona-Holt Ltd.

Leesona, which produces textile machinery in the U.S. and has substantial foreign sales, will continue to produce Holt's present line of machinery. Godfrey H. Savage, recently elected assistant vice president of Leesona, will act as liaison between the parent firm and Leesona-Holt.

New Orlon Fiber Offered

Du Pont is producing a new form of Orlon acrylic fiber which is said to have a characteristic never before achieved in a synthetic fiber—reversible crimp. The new fiber will supplement but not replace other types of Orlon. Called Orlon 21 acrylic fiber, the new product is reported to have greater elasticity and shape-holding qualities in women's and men's sweaters and in hand knitting yarns, the uses in which it will first appear. *For further information write the editors.*



The yarn path for BETTER loom beams runs through the Kidde-Johnson Slasher

Of course, you want tightly and evenly-packed loom beams. You want size evenly applied, with careful control of pick-up, and fast drying at regulated temperatures. You want controlled moisture content in the yarn after drying. You want equipment that's easy to maintain. The Kidde-Johnson Slasher meets your requirements perfectly. Here's why:

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2. **Rigidly supported loom beam**
3. **Fingertip calibration of stretch**
4. **Precise control of size level and temperature**
5. **Uniform application and penetration of size**
6. **Geared cylinder drive**
7. **High pressure, Teflon-coated cylinders**
8. **Stainless steel components**

Kidde makes the Slasher to suit your production requirements

The Kidde-Johnson Slasher will slash yarns of any fiber – filaments or spuns – from the finest count for delicate fabrics to the heaviest denier tire cord.

It is constructed to fit your requirements – for cotton system slashing, silk system slashing, or both.

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Rivals of rubber

two new snap-back filaments

Du Pont, U.S. Rubber offer elastic manmade fibers

By the Editors

TWO NEW elastomeric fibers have appeared to compete with rubber as the elastic element in fabrics where a high degree of stretch and snap-back is a desired property. The new fibers, one produced by Du Pont and the other by U.S. Rubber, fall within the category of "spandex" fibers as defined in the recently issued rules of the Federal Trade Commission for enforcement of the federal Textile Fiber Products Identification Act which becomes effective March 3.

The FTC defines spandex as "a manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85% of a segmented polyurethane."

Du Pont's new elastomeric yarn, "Lycra", was introduced commercially last month. Its outstanding property is said to be the ability to stretch and snap back into place in a manner similar to rubber yarns. Known as "Fiber K" during its earlier evaluation period, the new fiber will be produced commercially at new facilities shortly to be built by Du Pont at Waynesboro, Va., where the company now makes acetate yarn and Orlon acrylic fiber. A major use for Lycra is expected to be in the women's corset and brassiere field.

Among the advantages claimed for the new fiber by Du Pont are greater durability and strength than rubber elastic yarn, a third less weight, longer wear in garments, and from two to three times as much restraining power. These properties, it is said, result in softer, lighter and sheerer girdles providing the same degree of figure control found in heavier, bulkier girdles. Lycra's properties are also said to make possible foundation garments, such as girdles and brassieres, that can be machine-washed, with proper temperature controls and machine-dried with complete safety. Lycra is said to be easily dyed and to possess high resistance to perspiration and cosmetic oils and lotions.

Lycra Physical Properties

Deniers Available	70, 140, 280, 420, 560
Break Tenacity, g.p.d.	0.6-0.8
Break Elongation, per cent	520-610
Power at 50% Elongation, g.p.d.	0.03-0.04
Power at 200% Elongation, g.p.d.	0.10-0.12
Stress Decay 1 min. at 50% Elongation	6-8%
Tensile Recovery from 50% Elongation	93.5-96%
Moisture Regain at 70°F., 65% RH	0.3%
Specific Gravity	Approx. 1.0
Abrasion Resistance	Good
Flex Life	Good
Color	White
Luster	Dull
Fume Oven Exposure—16 hrs.	
Color change	Slight—yellow
Physical property change	None
Fade-Ometer exposure—16hrs.	
Color change	Trace—yellow
Physical property change	None to slight
Resistance to heat	Yellows and degrades over 300°F.
Melting Point	482°F.
Sticking Temperature	347°F.

Identity Procedure

Lycra can be identified by its very high breaking elongation— over 500%; by its dog bone shaped cross-section, and its characteristic burning odor. Other means of identification are its specific gravity of 1.0; its melting point of 482 degrees F. and its dye receptivity. Lycra is soluble in boiling dimethyl formamide.

Du Pont's new elastomeric yarn, falls under the generic term "spandex", as defined by the Federal Trade Commission's rules for enforcement of the New Textile Fiber Products Identification Act. In addition to foundation garments, the end uses where Lycra will do a superior job, in Du Pont's opinion, are surgical stockings, swimwear, football and ski pants, and a wide variety of narrow fabrics which require a high degree of stretch such as sock tops, knitted cuffs, garters, waistbands and belts.

For this, the seventh textile fiber introduced by Du Pont, more complex chemical reactions are required in manufacture than for any of the others. (These are rayon, acetate, nylon, Dacron polyester fiber, Orlon acrylic fiber and Teflon fluorocarbon fiber.) Du Pont reports that the development of its spandex fiber was spread over many years of research at a total cost of more than $10 million. The initial installation for Lycra output at Waynesboro is expected to be completed by the third quarter of 1960. Until then the ber will be in limited supply since present production facilities are not much greater than the laboratory equipment which produced the first samples for market evaluation.

Lycra is a monofilament yarn available in 70, 140, 280, 420, and 560 deniers. Prices range from a high of $9.80 a pound for the 70 denier down to $4.75 for the 560 denier. The fiber is inherently white and thus can be woven or knitted into fabrics "bare" or uncovered. Fabrics containing Lycra can be dyed in the piece as opposed to the dyeing of the fibers before weaving.

The evaluation program carried out by Du Pont over the past 18 months in the foundation garment industry demonstrated, according to Du Pont, that the fiber has longer flex life, durability and better washability than fabrics containing elastic yarns made with

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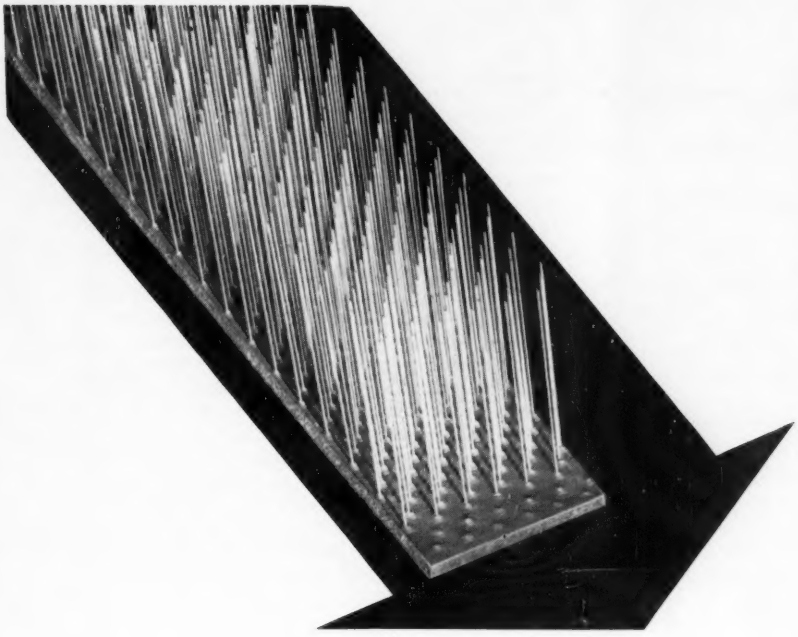

Straight as a Ramrod Perfect in Alignment—

that's Tuffer TRADE MARK

The carefully ground teeth of Tufferized Card Clothing are set with military precision in Tuffer foundation to suit the individual job.

These tough wires stand straight and firm as a ramrod, with just the proper flexibility, and with every point in exact position. And expert grinding keeps the points efficiently sharp for a long, long time.

Tuffer precision craftsmanship produces the consistently uniform Card Clothing you want for a smooth, even sliver with minimum variation.

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Direct Representation in Canada

894

Snap-Back Fibers

(Continued from Page 38)

rubber. Du Pont reports that foundation garments in three fabric types—warp stretch leno, filling stretch leno, and power net—were washed 50 times in automatic washing machines at 140 degrees F., using a standard household detergent. Each washing was followed by drying in an electrically operated home tumble-dryer at 180 degrees F. (cool setting). One group of the three fabric types was made with rubber elastic yarns, the other with Lycra. The fabrics were then stretched 30% of their relaxed dimension, and their restraining power was measured. Then they were flexed repeatedly.

After 10,000 flex cycles, the conventional warp stretch leno had lost 16% of its restraining power, compared to 10% for the one containing Lycra. In the filling stretch leno, the rubber elastic fabric was incapable of being flexed after 5,000 cycles, while the fabric of Lycra was in good condition after 10,000 cycles. In the power net comparison, the sample with Lycra was in good condition after 10,000 flexings, while the rubber control fabric failed after 500.

Introducing Vyrene

Another Spandex fiber recently announced but not yet in commercial production is "Vyrene", a product of United States Rubber Co., long a producer of rubber yarns and rubber-based yarns, the latter under the trade name of "Lastex." Vyrene is said to possess these properties: exceptional elongation and recovery; resistance to deterioration from laundering and dry cleaning; light weight.

A limited amount of Vyrene yarns have been made available to fabric manufacturers for evaluation purposes in the core size 1/150 of an inch in diameter which is said to be about 50% finer than rubber-core yarns now used in swimwear. Like Lycra, Vyrene can be used covered or uncovered. When covered, the Vyrene can be combined with nylon, cotton or rayon, although most of the Vyrene now in use is covered with nylon. Vyrene can be piece-dyed as well as yarn-dyed. U.S. Rubber foresees for Vyrene wide use in elastic fabrics of a softness and sheerness not before available. These are expected to include swimwear, corsets, brassieres and other intimate apparel.

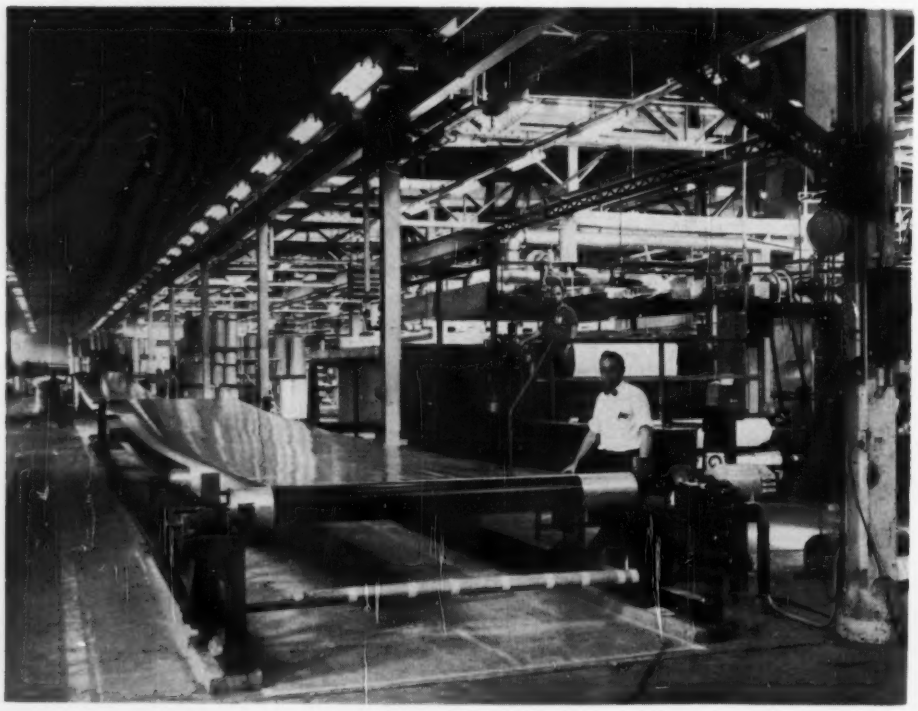
Arnel Fiber Marketing

Celanese Corp. of America's research and marketing program aimed at putting its Arnel triacetate fiber into a previously untapped market reaches the crucial retail stage this fall and next spring when knitted outerwear made of Arnel-Orlon and Arnel-cotton fabrics will be available in volume for the first time. Men's sport shirts and women's and children's clothing made of 50-50 Arnel and Orlon circular knit fabrics are being retailed for the first time this fall. Apparel, mainly men's sport shirts made of 60% Arnel and 40% cotton circular knit fabrics, will make their appearance at retail next spring.

Textile Outlook Bright

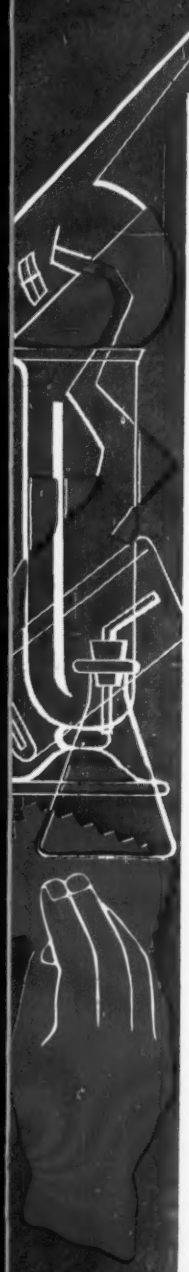
Continuing improvement in textiles was predicted recently by a number of industry spokesmen. Total textile industry sales in 1960 should be around $15.1 billion, according to George R. Vila, group executive vice president of United States Rubber Co. He told the American Management Association's recent annual sales forecasting conference that conditions within the textile industry are more favorable today than at any time in recent years.

William C. Cannon, president of the North Carolina Textile Manufacturers Association, also predicted continuation of the industry's improved profit position.



BIG BLANKET—For use on a 16 color automatic screen printing machine, this print blanket is 104 yards long, 76 inches wide. It was recently installed at the plant of Printed Fabrics Corp., Carrollton, Ga., to operate on a machine designed by Thorne-Brown Co.

DYEING and FINISHING SECTION



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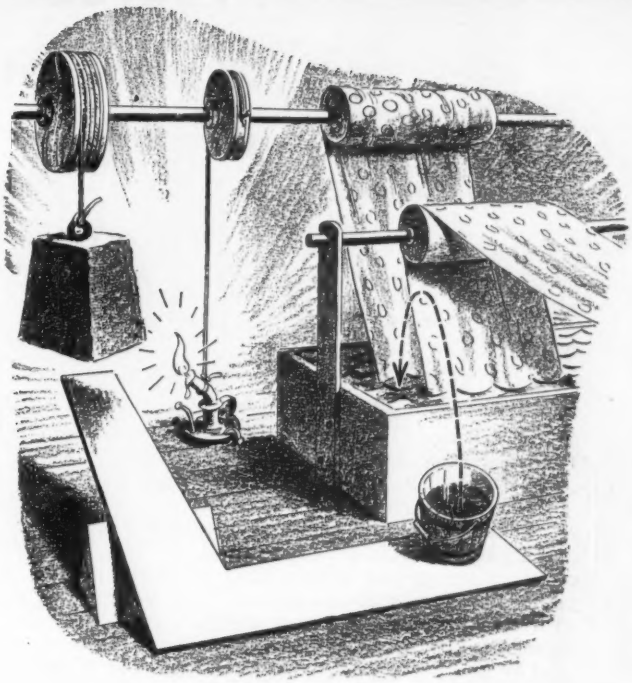
Candle burns the thread. The shaft starts to turn. Weight drops on board, flipping dye pail into vat. Production begins.



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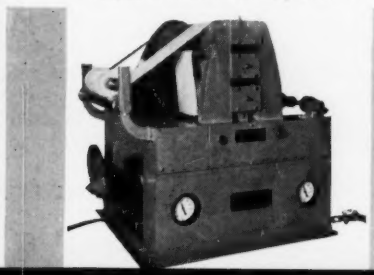

Butterworth Warp Mercerizing Range

Progress in blends finishing, dyeing methods & machines

(AATCC convention papers continued)

The second symposium, devoted to new developments in the dyeing and finishing of blends, had for its chairman James E. Greer of Burlington Mills Corp. The following are abstracts of the papers presented.

Recent Trends in Blends Finishing

By H. H. Latham,
The Arkansas Co.

THIS PAPER is a discussion of current development in production methods of finishing fabrics composed of varying amounts of natural and/or regenerated cellulose, along with commercially available hydrophobic fibers. A review of the chemical treatment of such blends is, for the most part, a comparison of processing chemicals and procedures currently being used by finishing plants, to raise the quality of wash-and-wear goods to meet specifications already set up by over-zealous advertising claims.

Advantages and disadvantages of urea-formaldehyde, dimethylol ethylene urea, acetylene diurea, triazone, epoxy, modified melamine resins and mixtures of same are noted, along with mention of additional commercially available so-called "cyclic formaldehyde resins", which have not been fully identified to the trade except by end results.

Late ideas in catalyst application are explained and the use of many buffering agents is examined. Production test results are shown to substantiate theories which have long been thought of as laboratory curiosities. Practices in many mills indicate a greater tendency toward top softening in conjunction with resin-plasticizer application. Economy of this practice is studied.

It is pointed out that wider use of modified alkyd and straight alkyd resins is helping to overcome wash-down of hand. These are used in lieu of portions of surface polymers and in conjunction with cellulose reactants. This group of products is said to resist mark-off and to increase adhesion of surface resin to hydrophobic fiber of the blend. Semi-permanent dulling may be accomplished in the same procedure.

There is a reported rivival of interest in use of glycerine along with polymeric dispersions of synthetic lattices to avoid pick-off from pad rolls. Examples are given to show the change of hygroscopic character of the glycerine when entering into reactions with various resins including silicones. Observations indicate no degradation of spray rating when cured in presence of available silicone water-repellents. Silicones are reviewed, both as softeners and as water-repellents. Catalysts for silicones of either acid or alkaline nature are exhibited.

The paper acknowledges a variety of procedures in preparing goods for water-repellent finish, with a discussion of nonrewetting dyeing and pre-finishing auxiliaries. The subject of memory marks is examined, along with comments on methods of using swelling agents and/or premercerization of cellulose fiber to avoid traces of permanent markings on resin treated blends. An evaluation of pretreatments before fabric coating is presented.

Dyeing Dacron Blends

By P. L. Meunier,
The Du Pont Co.

RECENT PROGRESS in dyeing fabrics of "Dacron" blended with wool, rayon, cotton, "Orlon" acrylic fiber, Acrilan acrylic fiber and Arnel triacetate fiber is discussed. Particular emphasis is placed on blends of "Dacron" with wool for men's and women's wear in which the "Dacron" is dyed with disperse or cationic colors and the wool with acid, premetalized acid, or chrome dyes.

The effect of heat setting prior to dyeing on the absorption of disperse and cationic dyes by "Dacron" is an important consideration especially in the production of lightweight tropical suiting fabrics which tend to crease in beck dyeing. Data is presented to show the effect on dyeability after heat setting at temperatures in the range of 280°F. to 400°F. The present work includes the effect of heat setting on the dyeability of staple fibers of Type 54 "Dacron" and the new modified Type 64 "Dacron". Previously such data were available only for filament "Dacron".

Carrier dyeing of blends containing "Dacron" is also discussed in relation to the acid modified Type 64 "Dacron" with disperse and cationic dyes.

The effects of dyeing time, dye selection and rates of dyeing on staining of the other components of blends and the resulting effect on fastness to solvent bleeding is emphasized.

Dyeing Zefran-Cotton Blends

By R. L. Burgess,
Dow Chemical Co.

THE WASH-AND-WEAR properties of Zefran, Dow Chemical Co. acrylic fiber, are most fully realized when yarns and fabrics containing the fiber in combination with cotton are dyed with vat colors. These colors naturally complement true wash-and-wear fabrics of Zefran because of their ability to withstand

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628-8

repeated launderings, household bleaches, sun exposure, perspiration and other destructive influences normally encountered by minimum-care type garments.

Light, medium and heavy percentages of the most widely used vat prototypes have been dyed on Zefran and cotton at temperatures ranging from 120° to 180°F. Medium and heavy percentages of color dye union shades in the general temperature range of 140° to 180° F.

When using light percentages of dyes, a retarding agent may be required for the Zefran to obtain the union shade. The most effective agent found thus far to accomplish this with maximum effectiveness is 2, 2'-dihydroxy-5, 5'-dichlorodiphenylmethane.

Special attention is given in the paper to the process by which light shades are obtained. The amount of retarding agent necessary to obtain good unions when dyeing a low percentage of vat color has been determined for a representative series of vat dyes. These dyes have been selected from the hot, warm, and cold dyeing types. Samples of fabrics were shown in which the retarding agent was used in percentages ranging from 0-5%. The paper includes a comprehensive list of vat dye combinations that achieve union shades of Zefran and cotton in the package machine and also when using the pad-jig method.

Current Bleaching Trends

By B. K. Easton,
Food Mach. & Chemical Corp.

IT IS FITTING that a symposium on "New Dyeing and Finishing Processes" should include a paper on bleaching. The importance of bleaching is generally recognized, but often little talked about when other finishing processes are discussed. Yet a poor bleaching job leaves its effects on every one of the subsequent operations.

In keeping with the general theme of this symposium, this paper deals entirely with fabrics and in particular the fabrics that appear to be drawing the most attention. They are 100% cottons and blends of cotton with the synthetic fibers. There is brief mention of a few of the 100% synthetic fabrics.

The first part of the paper is devoted to the bleaching of blends of cotton with the triacetate fiber Arnel, the acrylic fibers Acrilan and Zefran, and the polyester fibers Dacron and Kodel. Although there are other synthetic fibers in commercial production and newer ones still in pilot plant production, it is believed those chosen are representative of the fibers most seen today.

Bleaching blends of cotton with synthetic fibers would seem to be primarily a question of bleaching the cotton component. Nevertheless, we must consider the sensitivity of the various synthetics to alkali and the fact that some synthetics will sometimes revert to a tan color during bleaching. These factors limit the type of bleaching methods to choose from.

This paper summarizes the results of many laboratory experiments by listing in table form the results obtained by the various bleaching methods on these blends when handled either on jigs or in continuous bleaching equipment. The bleaching agents used in this work are peracetic acid, sodium chlorite, hydrogen peroxide, and the new peroxymonosulfuric acid salts.

The last major section of this paper deals with the bleaching of 100% cotton fabrics. Since much has been printed in recent years on the bleaching of medium and light weight fabrics only a short resume of rope strand, continuous bleaching methods is given. Emphasis will be directed towards open width bleaching of heavier fabrics, such as, twills, drills, sateens, etc. Equipment now in use as well as new equipment now or soon to be available is described. A new machine which will permit continuous open width bleaching at elevated pressure and temperatures is described. It is pointed out that this machine will undoubtedly find interesting uses in textile finishing.

Since a surprisingly large quantity of these heavier fabrics are prepared and bleached by batch methods, this paper describes in detail some of the latest improvements in open width batch methods. The sequence of the steps in these procedures are listed as well as the results of full analysis of cloth bleached as described.

Included with the batch methods for open width bleaching is a description of a recent development which gives a marked improvement in the absorbency of cloth bleached by means of a cold bleach method. This is a new development being announced for the first time, and it is one which we believe will attract a great deal of interest.

New Continuous Dyeing Machine

By Joachim Roehl,
A. Monforts Maschinenfabrik

THE MONFORTS REACTOR is a new development in machinery aimed at meeting the demand for the continuous handling of thermal and chemical reactions at elevated temperatures under steam pressure in several fields of the textile industry. This requirement has been accentuated by the increase in the types and blends of fibers in vogue today that have not really responded to conventional continuous processing methods.

The machine is composed of four major component parts: a padder, a large double jacketed cylinder, an endless Neoprene coated blanket, and a blanket preheating cylinder. Each of these component parts is of specific design and importance to the continuous functions of the complete machine.

The endless blanket is made of 8-ply cotton fabric, coated with Neoprene on both sides. It withstands temperatures of 385°F. for prolonged times, and its smooth polished surface is automatically cleaned and heated to the desired temperature on each pass.

The blanket covers the whole circumference of the Teflon coated large cylinder. Fabrics enter the reactor after liquid treatment in the padder and are guided through the machine between the heated surface of the large cylinder and the rubber blanket. The blanket seals the fabric hermetically on the cylinder during the operation. Part of the liquid contained in the fabric is evaporated; the steam produced cannot escape and forms a closed steam pressure around the fabric between cylinder and blanket circuit, in which the respective physical processes take place in a very short period of time. The complete close-off from outside air is hereby of utmost importance.

The following processes are carried out on this machine in several textile mills in Europe and South America: desizing of open-width fabrics, ageing of vat prints, developing of vat dyed fabrics, dyeing with Hydron blue, dyeing with Anthrasol and Indigosol

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dyes, dyeing with substantive or direct dyes, Naphtholating or treatment with Naphtholate, dyeing with disperse dyes on acetate, triacetate, and polyester fabrics.

On fabrics susceptible to dyeing defects, continuous desizing on the reactor in conjunction with subsequent washing is done without creases or any other harmful effects to the fabric and can be run in tandem with open-width bleaching.

The ageing of vat-color printed fabrics with hydrosulphite (coloresin process) has been widely practiced in Europe with very good results. Probably the most important function of the reactor is in the field of dyeing and development processes. Both light and deep shades have been successfully handled. Dyeing of deep shades heretofore accomplished only on jigs is of particular importance on the reactor. In all cases, except when dyeing with vat colors, the reactor is taking the place of the pad and dryer, and this means elimination of intermediate drying.

Another use of the reactor is the application of Naphtholate when dyeing with Naphthol colors without intermediate drying at speeds up to 90 yards per minute. Savings in dyestuff and chemicals, extremely reduced processing times, reliability and ease of operation, elimination of creasing and stretching of fabrics, complete exclusion of atmospheric oxygen during vat reduction, savings in time for preheating the machine, savings in steam, are all factors which cannot be overlooked. Versatility is another advantage of this new machine—the Monforts Reactor.

"Thermosol" Dacron-Cotton Dyeing

By J. J. Iannarone & W. J. Wygand,
The Du Pont Co.

THE THERMOSOL PROCESS is a continuous method of dyeing whereby dye fixation and penetration are accomplished with dry heat. It is particularly effective in the application of disperse dyes to Dacron polyester fiber and its blends with cellulosic fibers. In dyeing this important blend, selected disperse dyes are used to dye the Dacron component by the Thermosol process and, where necessary, vat dyes are applied to the cotton by conventional procedures. Fabrics dyed in this manner are generally equal in fastness to vat-dyed cotton and will meet wash-and-wear fastness requirements.

As is the case in any continuous operation, cloth preparation prior to dyeing by the Thermosol Process is extremely important. Oils and dirt, which could be set into the Dacron by the Thermosol operation, must be completely removed before dyeing. Furthermore, the cloth must be wet out readily in order to obtain instantaneous absorption and penetration at the padder. Suitable preparation procedures are available.

For many pastel shades it may be possible to obtain suitable coverage and solidity of shade by dyeing only the cotton portion of the blend by the pad-steam process. For light to medium shades dyeing only the Dacron by the Thermosol process may suffice. But for heavy shades it is necessary to dye both fibers in two separate operations. Recent laboratory results indicate that it may be possible to dye both the Dacron and cotton in a one-pass operation, using disperse dyes and fiber reactive dyes, both of which can be applied to the respective fibers with dry heat. However, much work remains to be done to determine the commercial feasibility of this approach and to evaluate the economics and fastness properties of mill dyeings.

Fixation and penetration of disperse dyes applied by the Thermosol process are very rapid. Under proper conditions, complete penetration of the fiber is obtained in 30-45 seconds at 400°F. Utilization of most dyes is good and compares favorably with that obtained by conventional aqueous procedures.

The disperse dyes used for application by the Thermosol process must be carefully selected. Only those which exhibit good build-up and minimum vaporization under Thermosol conditions should be considered. Preliminary results show that blends of rayon and Dacron polyester fiber type 64 can also be dyed adantageously by the Thermosol process. The Thermosol process has been successfully demonstrated in numerous mill-scale dyeings and is a practical continuous method of dyeing.

Dyeing Arnel Circular Knit Blends

By R. E. Lacey & Jack Dagvault,
Celanese Corp.

ARNEL TRIACETATE HAS made its entry into the circular knit field in blends and combinations with Orlon and with cotton. The inherent physical properties of Arnel contribute improved dimensional stability and pilling resistance to properly engineered knit fabrics. An increased scope of color styling through piece dyeing is possible because of differences in dyeing properties of Arnel, Orlon, and cotton.

Commercial one-bath procedures have been developed for dyeing Arnel/Orlon and Arnel/cotton knit fabrics into a range of union, reserve effect and cross-dyed shades.

The role of dye selection, pH control, surfactants, accelerants, and retarders in the development of a one-bath procedure for dyeing 50/50 Arnel/Orlon knit fabrics is demonstrated. Selected cationic dyes for Orlon and disperse dyes for Arnel are used simultaneously in the same bath for dyeing cycles than required by former two-bath precedures. Color fastness properties which meet commonly accepted standards in the knit industry can be easily obtained by the one-bath procedure.

Chemical and mechanical finishing techniques for the high bulk Arnel/Orlon fabrics are similar to those used for the 100% acrylic and acrylic/wool blend knit fabrics.

In the Arnel/cotton blend and combination knit fabrics, disperse or azoic dyes are used for the Arnel. After treated direct or developed dyes are used for the cotton. For several applications Arnel affords adequate dimensional stability to the fabric; however, resin finishing for the cotton portion of the blend can be used to produce knit fabrics with very low shrinkage in washing.

The dyeing of Arnel/Acrilan blends has been investigated. Unions can be obtained by selective use of disperse dyes only or disperse and cationic dye combinations. Cross-dyed effects are limited because of dual affinity of Arnel and Acrilan for disperse dyes.

NEW DYEING PROCESSES

Some recent advances in dyeing processes along with reports on the advantages of several new dyeing machines were the subjects of the third symposium. Fred Fortess, Celanese Corp., served as moder-

Geigy Dyestuffs Division of Geigy Chemical Corporation,
Saw Mill River Road, Ardsley, New York

Branches: Charlotte, Chattanooga, Chicago, Los Angeles, Newton Upper Falls, Philadelphia, Portland

ator. The following are digests of the papers presented in this symposium.

Pressure Beam Dyeing

By W. J. Newcomb, Gaston County Dyeing Machine Co., & G. C. Ward, Celanese Corp.

PRESSURE BEAM DYEING machines have been available in the United States for the last 7 or 8 years. The usefulness of this type of machine has been consistently demonstrated for the bleaching and coloring of a wide range of fabrics. Among these are warp knit fabrics made from acetate, Arnel triacetate, and polyamid yarns; marquisettes and ninons from acetate, nylon, and Dacron; filament Dacron fabrics and blends of polyester fibers with cotton, nylon and wool. Since the first machines were introduced, a number of mechanical improvements have been made such as:

1. Automatic heating and cooling which will allow careful control of temperature throughout processing.
2. Automatic pressure and flow control which will enable the operator to predetermine the conditions of pressure and flow direction through an entire process.
3. The enclosed expansion tank which will permit the use of the entire dye charge is a recent introduction.
4. By the use of a running wash system the fabric may be rinsed cleaner and faster.
5. An automatic beam revolving device can be made a part of the machine.

Advantages of the pressure beam dyer include the ability to dye at temperatures above the boil, thus increasing the rate of dye absorbency; more complete dye absorption; more complete penetration (and thus better fastness); ability to dye fabrics which could not be processed by other means due to tensions or susceptibility of the fabric to crease. A brief discussion is included of difficulties still to be overcome.

Svetema Pad Roll Machine

By R. M. Lesch, Northern Dyeing Corp.

THE TWO MAJOR FACTORS that led to the purchase of the pad-roll dyeing machine were economy of operation from the standpoint of dyestuff and labor cost and consistently superior quality promised. The pad-roll machine has fulfilled its promise and a discussion of the theoretical background and the practical dyeing machine which resulted from this theory makes self-evident the reasons why.

The various types of dyes which are suitable for pad-roll work are many, but must be carefully selected, and the laboratory technique for the matching of shades is time-consuming and exacting, but the end result achieved makes the effort worthwhile.

Comparatively, there is a large advantage in the savings in dyestuff labor achieved. Furthermore, the degree of diffusion of dyes into the fibers is even and complete, thus obtaining the optimum wet fastness obtainable. Comparative cross-sectional slides illustrating this show this to be self-evident.

Virtually every type of fiber and fabric can be dyed on the pad-roll machine. To date the dyeing of fabrics of cotton, rayon, acetate, Arnel, Dacron, Vycron, Dynel, Topel, Creslan, Orlon, Acrilan and wool have been successfully dyed. Only sheers and 100% hydrophobic fabrics have presented serious pad pick-up problems.

Acid dyes, premetallized, directs, fiber-reactive, dispersed dyes, cationics, and soluble vats, have all been successfully used in the pad-roll machine. There are, of course, disadvantages as well as advantages to the pad-roll dyeing system, but it is believed that the advantages outweigh the disadvantages.

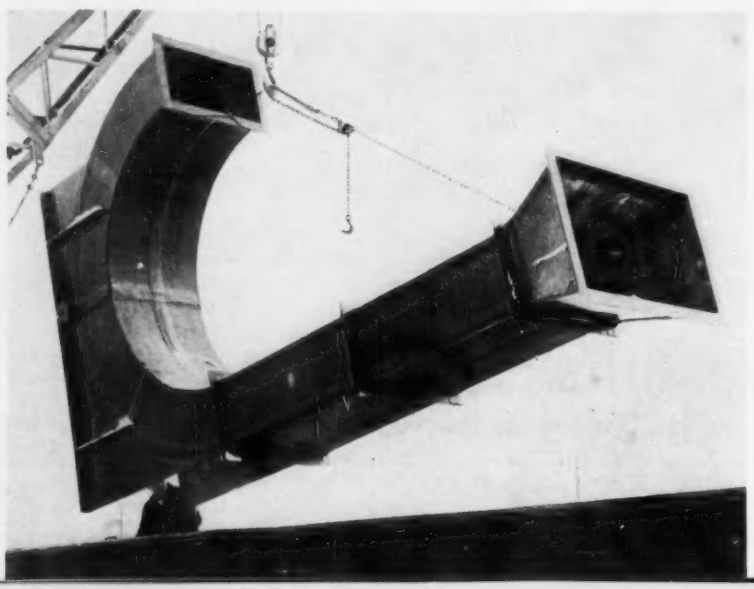
For the DYER and FINISHER

Fiber Glass J-Boxes

A new line of J-Boxes has been announced by du Verre, Inc. Fabricated from self-supporting resin-bonded fiberglass, they are described as rugged, lightweight and corrosion resistant both inside and outside. Du Verre ships components for field assembly and manufactures to any required size or shape. *For further information write the editors.*

Potato Starch in Textiles

The properties of potato starch and its uses in the textile industry are included in a 4-page bulletin issued by Morningstar-Paisley, Inc. The bulletin informs both chemist and mill man about starch selection and use, gives detailed descriptions of important physical properties of potato starch and relates these properties to textile processing. *For copies write the editors.*

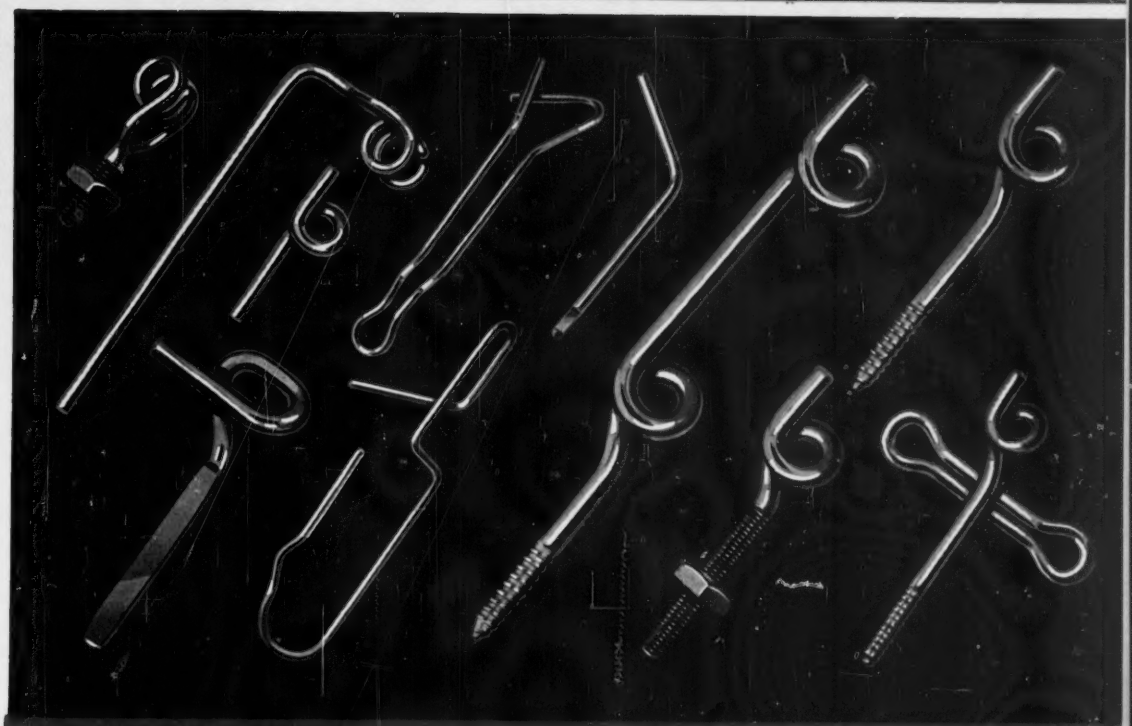


Du Verre Fiberglass J-Box

New Metrozol Dyestuffs

Metro-Atlantic, Inc., has added Metrozol Dyestuffs to its line. These are a new series of azoic dyestuff compositions especially developed for printing applications where neutral ageing is necessary. The Metrozol colors can be developed either with neutral or acid steaming but their greatest use is expected to be in those patterns where acid ageing is not desirable. The company also has developed Chlordare OR, a new resin for stabilization and crease resistance utilized in wash-and-wear finishes for cotton fabrics. *For further information write the editors.*

MACHINERY and EQUIPMENT SECTION



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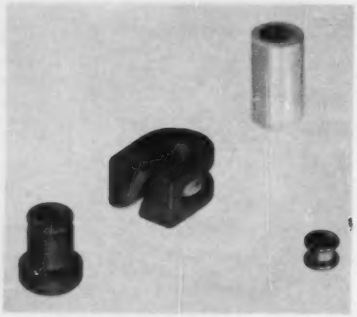


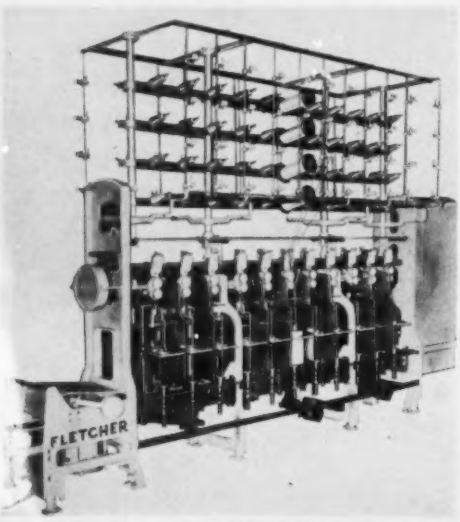
Unifil Thread Guides

New Alsimag all-ceramic thread guides for the Unifil loom winder manufactured by Leesona Corp. have been announced by American Lava Corp. The Alsimag ceramic guides are reported especially efficient on Unifil machines used for winding synthetic filament or spun yarns. Replacing glazed porcelain, the guides of Alsimag No. 193 material are produced in four shapes to fit the various yarn contact points on the Unifil. Alsimag is a homogeneous ceramic material said to have many times the wear-resistance of ordinary guide materials. *For further information write the editors.*

Improved Duplex Twister

Fletcher Works' Duplex Twister now runs on two style bobbins, 5-inch diameter by 10-inch traverse, and 6-inch diameter by 10-inch traverse. The 5-inch diameter machine runs at 9000 RPM at the spindle, which is 2000 revolutions faster than anything accomplished prior to 1959, according to Fletcher.

Both machines are being shipped with creels from two ends, as high as eight end magazine. The 5-inch machine has Fletcher's standard positive feed roller whereas the 6-inch machine has the new clutch type feed roller, which makes for better operation in heavier yarns. The Duplex machines run from the finest deniers up to 5500 denier yarns, with a twist range from one half turn up to 35 turns per inch. *For further information write the editors.*



Fletcher Duplex Twister

Cone Winder Tension Gates

Heany Industrial Ceramic Corp. is currently offering a tension gate equipped with Heanium contact fingers for certain cone winders. The new gate has a total of only 11 contact fingers, whereas the conventional metal-fingered gate has 19 fingers. The fewer number of fingers allows the yarn to generate angles from one contact finger to the next, which gives the gate a compensating ability, as well as a snubbing action to compensate for uneven conditions from the supply package.

A unique concave face design on the contact fingers is said to give much better lateral control of the yarn than the conventional flat face, especially toward tip end of cone or tube.

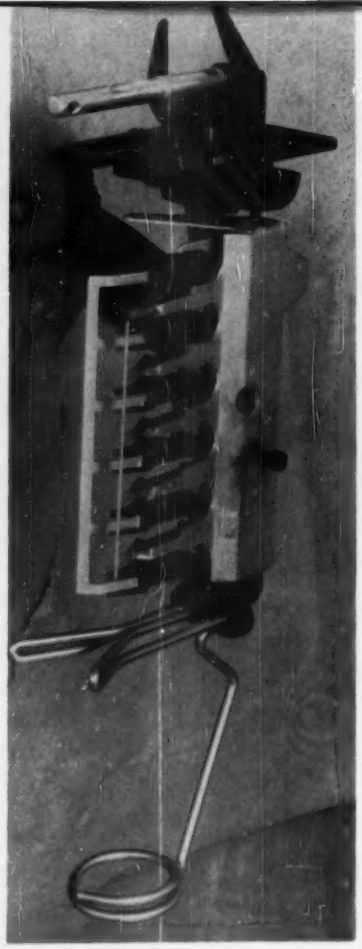
Advantages of the new tension gate are said to be better quality yarn; better package formation; better overall controlled tension let-off; a constant multiplication factor. *For further information write the editors.*

Lease Knitting Scanners

Lindly & Co., Inc., Mineola, N.Y., is leasing its tricot knitting machine broken end detector at a cost of around 12 cents per hour per machine. Under the Lindly plan, a minimum of 10 photo-scanners may be leased for a two-year period, after which renewal may be arranged at a considerably reduced rate. The scanners are said to detect cloth defects on high speed tricot knitting machines before the defects are more than about 1½ inches long, and automatically stops the knitter for their repair. *For further information write the editors.*

New Cloth Reel

New seamless reels made of laminated, corrugated cardboard flats bound together with kraft paper and a special adhesive have been announced by Acme Cloth Reel Co. This producer of reels for retail yard goods reports these advantages for its new reels: additional strength and rigidity—a particular benefit for Sanforized fabrics which require tighter winding than other goods; smoother, faster winding; no bunching of fabrics towards the middle because the reels have even thickness throughout their length. *For further information write the editors.*



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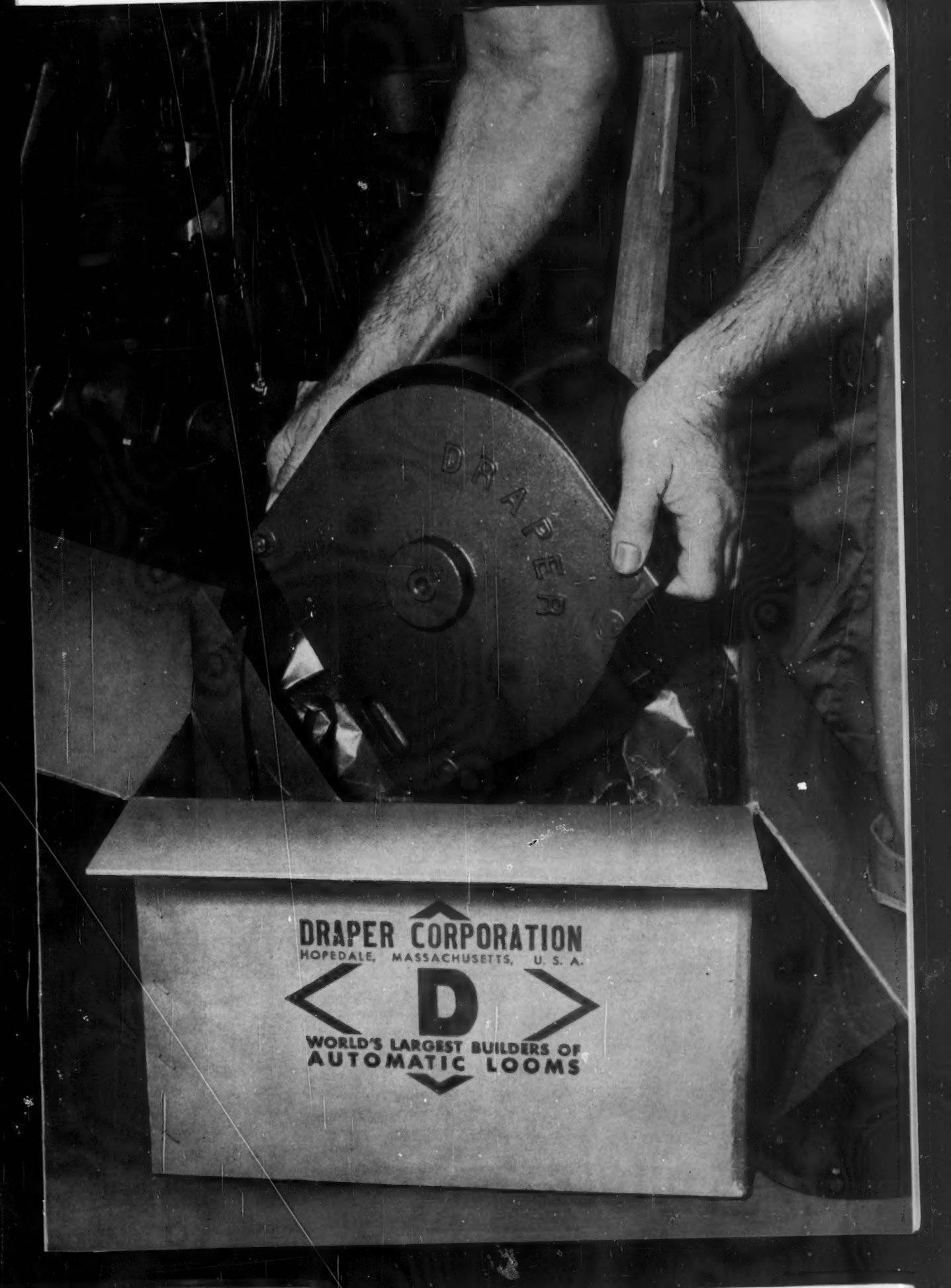
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3 Time Study

by Thomas F. O'Connor

It was shown that the cycle ratio, p, is the key to the use of the machine interference tables. The various components of this ratio are obtained by means of time study. It should be noted that each component consists of several elements or sub-components. For example, in weaving, the tender's non-deferrable work on a stopped loom, denoted by "t", may consist of the sub-components "mend warp break," "mend filling break," and "make mechanical adjustment."

Each sub-component consists of two parts: (1) the *unit time*, representing the average time required to perform an operation; and (2) the *frequency*, representing the average number of occurrences of a particular operation. Both of these values are obtained by time study. Multiplication of (1) x (2) yields the time for the sub-component. For example: if the unit time to mend a warp break is 40 seconds, and this operation occurs at a frequency of 6 per machine running hour (mrh), then the sub-component time consists of 40x6 or 240 seconds per mrh.

Rating

In order to arrive at correct time values, performance rating is commonly used. This is a process whereby a time study man evaluates the operator performance observed, by comparing it with a mental standard, and rating it as "normal", "sub-normal" or "above normal." Usually, numerical values are applied to the judgment. Thus, if 100 is considered normal, then a rating of 80 would indicate that a particular performance is considered slow. Accordingly, if an observed unit time is 40, then a rating of 80 indicates that normal time allowable is 40 x 80% or 32. On the other hand, if the rating had been 120, then normal time allowed is 40 x 120% or 48.

Rating places great reliance on the judgment of the time study engineer; and though his judgment may be strengthened by training the procedure has many critics. When there is only one operator and one time study man, rating is inevitable; even if it is of the tacit type, in which whatever performance is witnessed is accepted as normal. Where several operators and several time study men are available, inter-operator and inter-time-study comparisons may be made, and selectivity applied as regards abnormally slow operators, such as beginners or unusually skilled and fast operators. Some prefer to use averages either with or without selection of operators. The subject is still under debate and practice varies from mill to mill.

Allowances

In random servicing, the distance walked by an operator to service a given stop is no indication of the distance he will have to walk to any other. Therefore, the task time of an operation is usually measured "net," that is, without walk time. Later on, an allowance will be added, based on average distances walked.

After task and walk times have been computed, an allowance of 15% is usually added to the total time, to cover contingencies, personal needs, and fatigue elements. No allowance is made for machine interference, and no attempt is made to measure it. The reasons will be apparent in due course.

Illustration

It is assumed that the time study man has taken care of the preliminary work, such as explaining the purpose of his studies to the operators concerned, cooperating with the supervisors, and other matters

(Continued on Page 60)

UNIT TIMES - WEAVING.

Category: Weaver's work during loom stops - non-deferrable.

Date: 6.15.50. Ppm: 120
Loom: C & K W-3 Ppi: 30
Weaver: Nat Carmichael Warp: 40/2
Assignment: 12 looms Fill: 30/1

Task no. Description	1 Warp Break		2 Filling Break		3 Mechanical		4 Other					
	109	41	40	48	30		110		(Clear warp)			
	39	90	47	42								
	104	45	43	43								
	41	96										
Total times												
Readings												
Average												

Figure 1—Form for recording Unit Times. (Times in hundredths of a minute).

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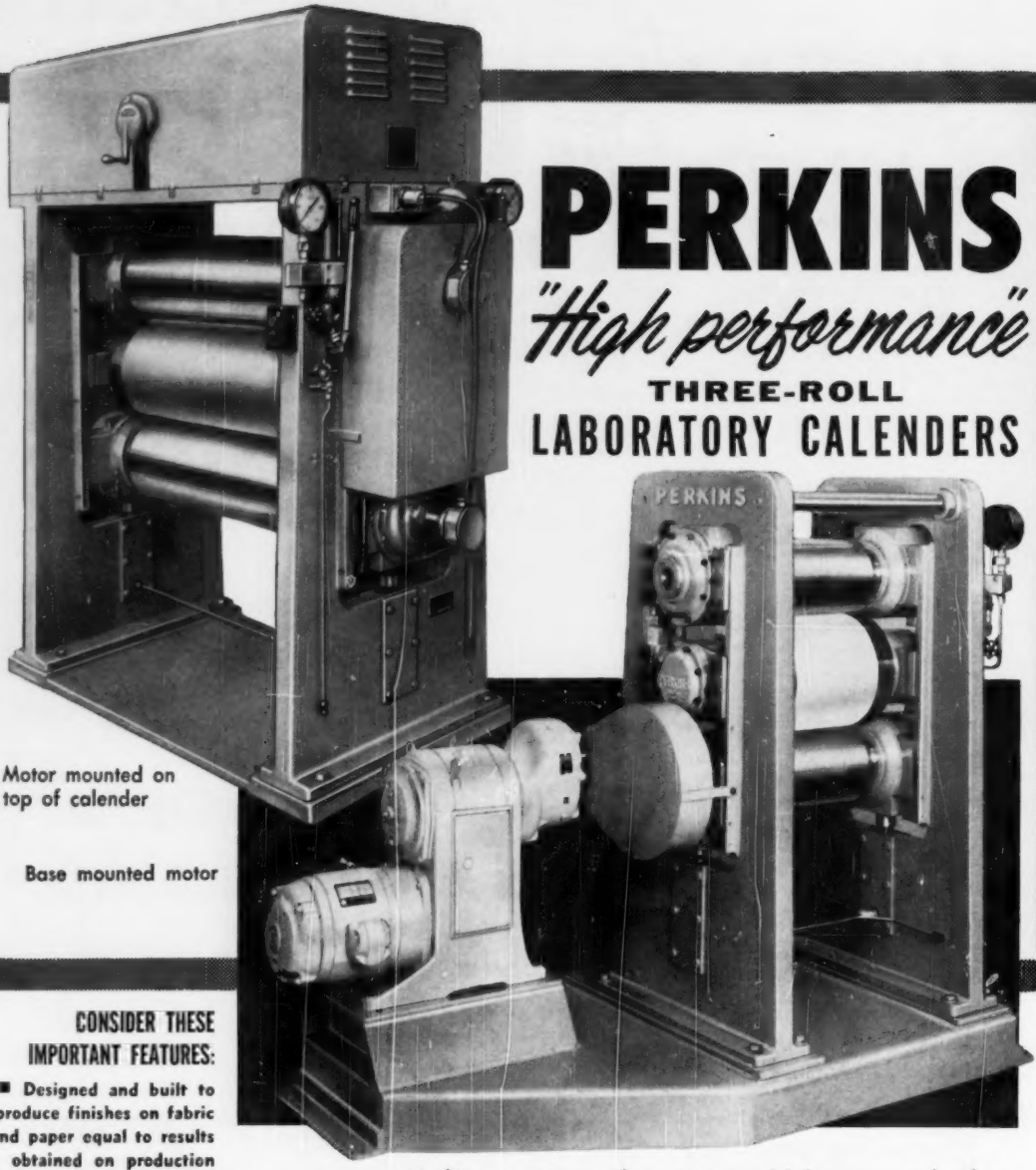

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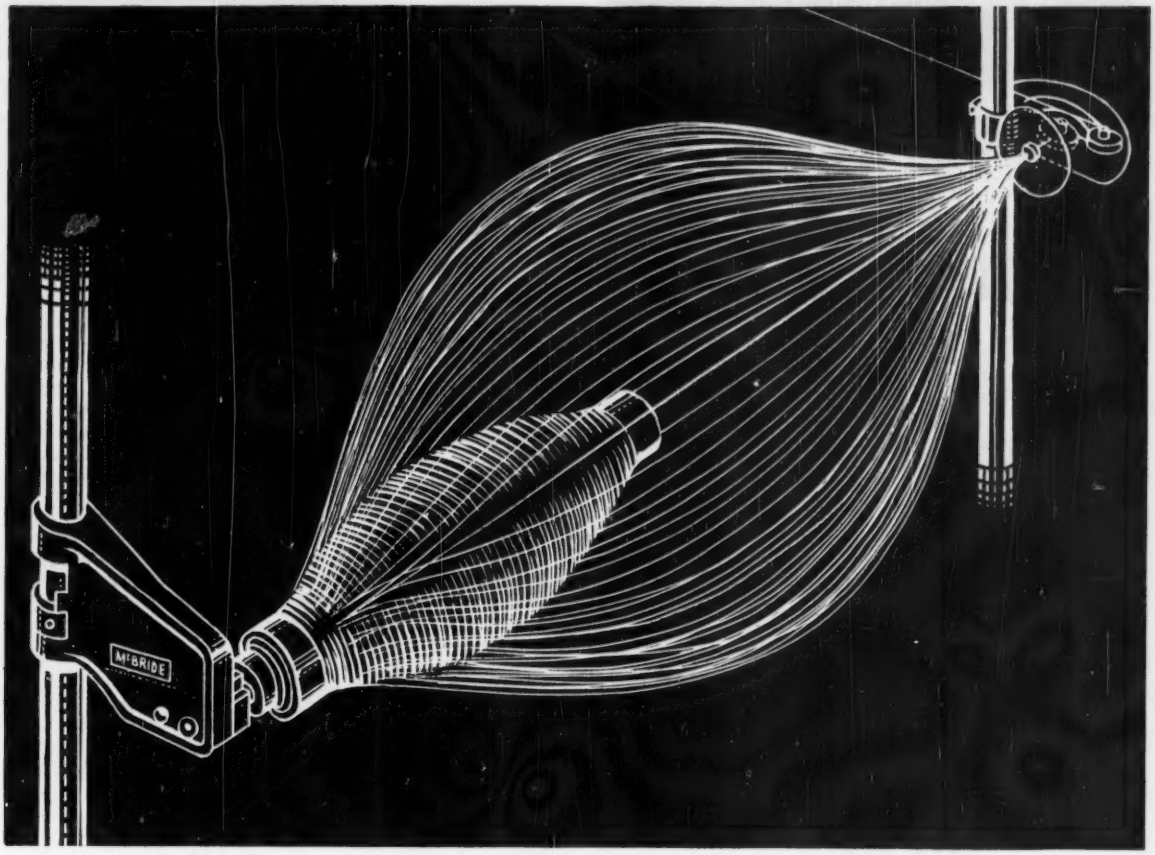

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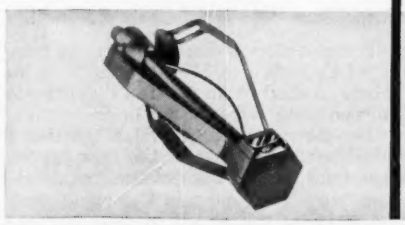

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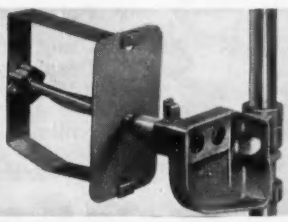
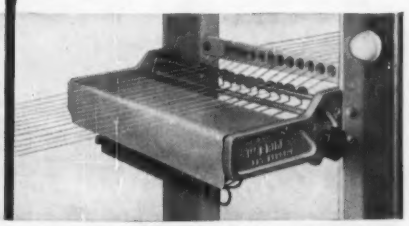


MERCURY SWITCH STOP MOTION



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New Rayon-Dynel Blend

A new fabric containing 70% Avron high strength rayon produced by American Viscose Corp., and 30% Dynel modacrylic fiber of Union Carbide Co. was introduced recently by McCampbell & Co. The fabric is one of the first fine yarn fabrics produced under the Bondyne tradename which requires at least 30% Dynel in the filling yarns. It is intended for dresses, blouses, skirts and shirts. The fabric is said to possess easy washability, and wrinkle resistance plus a fine silk-like hand. It is priced at 85 cents a yard.

Dacron Covers

A fabric baffle made of specially treated, closely woven DuPont Dacron which is suspended by Dacron ropes from a geodesic dome constructed of aluminum panels and stainless steel frames—this unusual installation at the sewage treament plant of Sarasota, Fla., has been eliminating offensive odors and air pollution from hydrogen sulfide fumes since January 1958. After more than a year, the fabric liner shows no sign of degradation. Weighing 3.4 ounces a square yard, it covers an area of 10,000 square feet and is shielded from direct sun rays by the metal dome. To connect the liner and the metal cover, Dacron rope was selected because it resists many chemicals and is not weakened by bacterial micro-organisms. *For further information write the editors.*

Vinyl Apparel Fabric

Fabrilite is Du Pont's new wash and wear vinyl coated fabric for all-weather sportswear. It's a soft and pliable, elastic fabric with a leather-like appearance, of medium weight, and resists fading, scuffing, soiling and tearing. Jackets of Fabrilite with suitable trim and linings may be washed in an automatic washer, followed by a cold water rinse; dry cleaning is not recommended. *For further information write the editors.*

New Flaikona Cloth

Penco fabrics has brought out two new fabrics made from American Bemberg's Flaikona yarns combined with acetate. They are Silka-Shan, a solid and Shandor, a hand-screened print, which harmonize in 101 colors, have a textured silken look and supple hand, and when draped, they have iridescence. They are also said to be serviceable, cleanable and color fast to sunlight. Penco suggests room coordination with draperies, decorative pillows and bedspreads of these fabrics. Quilted bedspreads of Silka-Shan and Shandor are available, too. *For more information write the editors.*

Fire-Resistant Fabric

A fabric has been developed that retains its properties in prolonged exposure to 500 degress. It is an asbestos base fabric coated with "Viton" synthetic rubber and reinforced with wire of "Inconel" nickel-chromium alloy. The development of Viton synthetic rubber was essential to the creation of the new fabric, for its resistance to heat, chemicals, jet fuels and solvents is in a range completely new in the elastomers field. The new material is the result of development work by Raybestos-Manhattan's General Asbestos and Rubber Division, working with designers and engineers of Convair's Fort Worth Plant, and is being used for fire wall seals in the swept back delta wing of the Supersonic Convair B-58 "Hustler." *For further information write the editors.*

Happy Turnout at TDI Dance

More than 500 members and their guests attended the annual dinner dance of the Textile Distributors Institute at the Plaza Hotel in New York City on Nov. 5. The event began with a cocktail and smorgasbord party at 7 P.M. This was followed by serving of dinner. Dancing was continuous throughout the evening to the music of Mark Towers and his orchestra. The dinner opened with the playing and singing of "Hail to the TDI, nothing to sell and nothing to buy" which is the theme song of the Institute's social occasions. The flowers and centerpieces in the Terrace Room and Grand Ballroom where the affair was staged were in autumnal colors.

Arthur J. Wullschleger, Wullschleger & Co., Inc., was chairman of the dinner committee. Among members of the committee appointed by Nat Leavy, Goldstein & Leavy, Inc., president of TDI, were George Greenspan, The Cantor-Greenspan Co., Inc.; Jack Litwack, New England Textile Co., Inc.; Samuel Schwartz, Cadillac Textiles Inc.; and TDI vice presidents, Irving Roaman, Reliable Textile Co. Inc.; Louis E. Kates, French Fabrics Corp.; Walter Ross, Rosewood Fabrics Inc.; chairman of the board, and Ira Jacobson, Cohn-Hall-Marx Co., treasurer.

New Tax Law Clarified

A new federal law, enacted in September, limits the powers of states to tax interstate transactions. Analyzing the provisions of the law, counsel for the Textile Distributors Institute recently had this to say: Under the law, no state can impose a tax (measured by net income) on any out-of-state firm, provided that firm's *only* activity within the state seeking to impose a tax consists of the solicitation of orders for tangible personal property (for example piece goods) which orders are sent outside the state for approval or rejection and are filled by shipment or delivery from a point outside the state.

In short, if you are a New York firm and a sales representative or salesman of yours solicits orders in another state, which order is confirmed by you in New York and filled there, and sent to the other state, an income tax on that transaction cannot be levied on you by the other state.

The legislation also makes clear that the prohibition against taxation by another state applies to previous years, except where a tax for the previous years has actually been collected or assessed.

It is important to note that the new law has certain limitations that must be kept in mind:

1. To be exempt from taxation by State X, the orders must be sent out of State X for rejection or approval, and shipment or delivery must be made from a point outside State X. This means that if your salesman or sales representative in another state has authority to accept or reject orders from you without your confirmation in New York, you may be taxed by State X. The same is true if deliveries are made by you to State X in your own delivery trucks rather than by common carrier.

2. Solicitation of orders can be the *only* activity of the out-of-state firm within the other state. If you maintain an office or stock of goods within another state, the immunity does not apply and, under existing Supreme Court decisions, you would be liable to tax imposed by the other state for sales in that state. What other activities will result in disqualification for immunity from out-of-state taxing is hard to predict.

If you maintain a sample room or have a salesman who uses his home address which is in the state seeking to impose a tax and engages in other activities on your behalf in that state, you may well find yourself subject to taxation by that state.

This area will undoubtedly be subject to litigation and the test will probably depend upon whether the courts can be persuaded that the activity involved in the state seeking to tax is merely incidental to the solicitation of orders.

3. This immunity from out-of-state taxation *does* apply and protect you where you use an independent contractor or sales representative rather than an employee salesman, provided that the independent contractor (which includes a commission agent or broker or sales representative) sells for more than one principal and holds himself out as such in the regular course of business. This is probably true even though the sales representative lives in the state seeking to impose the tax.

4. The immunity of the new legislation is not applicable where a state seeks to tax the income from interstate transactions of a corporation organized under the laws of the state seeing to impose the tax (i.e., where a firm with offices in New York is incorporated in State X and then sells goods in State X).

It seems reasonable to believe that in their drive for increased revenues, the states will leave no stone unturned to restrict and limit the applicability of the new legislation. Out-of-state firms can expect to be under considerable pressure to pay taxes with respect to their activities within the state.

Preview Men's Wear

The men's clothing industry, under the sponsorship of the Clothing Manufacturers Association of the U.S.A., presented a musical fashion preview of its newest style creations for spring-summer 1960 in New York recently. More than 700 retailers and manufacturers at the premier saw a professional cast of actors, under the direction of Burt Shevelove, introduce more than 250 new garments. The association's members account for more than 90% of the nation's output of men's suits, topcoats, sport coats and formal wear.

Two Men of Jordan

(Continued from Page 34)

To meet the increasing demands of the furniture trade for more varied styling, Jordan maintains an inventory up to 500,000 pounds of colored and natural yarn. Goods are sometimes sold only to jobbers in pieces of 50 to 60 yards. Rabbitt points out that today furniture makers are buying more fabrics from jobbers than at any time in his 30 years in the trade. This trend is largely the result of the greater diversity in furniture upholstery that consumers demand these days.

To keep pace with this trend, furniture manufacturers, Rabbitt says, are willing to pay jobbers a little more for cut orders and quarter piece lots. Since many larger mills won't ship to jobbers the small and varied orders they need to satisfy the needs of the furniture makers, Jordan Mills today is selling more goods than ever before to these distributors.

Although they are the head men, Curtis Jordan and "Bunny" Rabbitt are by no means the whole show in Jordan's management. Over the years, they have built up a tightly knit, energetic and smoothly functioning executive team notable for its youthfulness. Ben Cummings, 43, vice president in charge of manufacturing, joined the company in 1940 as a time study specialist coming from Bibb Manufacturing Co. He moved up the ladder first as overseer of weaving and then on to be overseer of the twisting department. He then was successively night superintendent, day superintendent and general superintendent. In 1952 he assumed his present post.

A millman deeply devoted to his job, he is immensely proud of the modern, superbly equipped mill he bosses. He points to the dye house completely re-built and re-equipped since 1940 with Morton pressure equipment and Proctor dryers. He is equally proud of the spinning department with one-half its Saco-Lowell frames new since 1948 and the remaining half modernized in 1950 for long-draft production. He is proud, too of the efficient Whitin Cards and the late model Foster winding machines.

Among the reasons Cummings enjoys his job at Jordan Mills, he likes to point out, is the variety of work that passes through his departments. He enjoys working with so many new and different yarns. There's no monotony—something new every day," he says. He likes also the Jordan policy of spending liberally for modernization and the fact that he is given a free hand to run his departments as best he can.

Al Livingston, 39, in charge of yarn sales, is another young man whose abilities have been rewarded with executive responsibilities at Jordan Mills. Trained in his job by Curtis Jordan, under whose supervision he still works, Livingston paces the efforts of Jordan yarn salesmen and works closely with the company's New York sales agents, Jacobs & Robson, and its representatives in other cities, Carl L. Miller & Sons, (Philadelphia) R. W. Boyd, (Chattanooga) J. Allen Devant (Charlotte).

And then there is Vernard Smith, 36, the company's secretary and treasurer. He came to work in 1941 for Jordan as a mill hand and soon moved up into quality control. Curtis Jordan recognized his abilities and encouraged him to go to night school to study accounting and financial work.

Although normal growth in response to marketing opportunities is not by any means, ruled out, Curtis Jordan and his associates in Jordan Mills' management have no big plans for expansion. They feel that their relatively small, flexible operation has a place in today's sales yarn and upholstery fabrics trade; and they intend to hold that place and keep it a profitable one.

Time Study

(Continued from Page 54)

vital to the success of his work, (but not part of this series of articles). Now he is ready to start the main part of his work. He begins, say, with the determination of "t", the weavers priority external work time per machine running hour. He requires first a unit time for each of the subcomponents and here is how he will proceed.

1. Select the operation and operator for study.
2. Identify those duties of the operator which fall into the category under study, and write a brief job description, with special attention to starting and stopping points of operations.
3. Prepare a recording form for unit times, as shown in Fig. 1. Enter weaver's name, loom type, and related particulars.
4. Using the snap-back method of recording time elements,

(Continued on Page 83)

UNIT TIMES - WEAVING

Category: Weaver's work during loom stops — non-deferrable

Date	6-16-59	Ppm	120
Loom	C & K W-3	Ppi	30
Weaver	Nat Carmichael	Warp	40/2
Assignment	12 looms	Fill	30/1

Task no. Description	1 Warp Front		2 Warp Rear		3 Filling Break		4 Mechanical		5 Clear Warp		6. Misc.	
	41	39	109	90	48	46	31	36	105	121		
	45	41	96	104	44	45	35	35	110	98		
	40	42	90	107	40	41	29	30	106	111		
	etc		etc		etc		etc		etc			
Total Times	1290		2772		1290		660		2060			
Readings	30		28		29		21		20			
Average	43		99		44.5		31.4		103.			

Figure 2—Record of Unit Times as observed.

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TEXTILE MARKETING in the 1960's

By Leland S. Liang

IN LIFE, generally, it is never too early to prepare for the future. This is especially true for textile company managements faced with the need to do business profitably in an increasingly competitive economic climate. The aim of this article, therefore, is to analyze some of the problems of the textile industry, and particularly to look ahead to the 1960's and see what is in store for our industry, and how we can cope with its marketing problems.

At the outset, I would like to make it clear that I do not pretend to know the answers to all problems. As a student of the textile industry in all my adult life, I have studied closely the marketing problems of our industry, and have tried to reflect on some of these problems. Our discussion tonight is based on some of my observations and my appraisal of the textile industry.

No one here will dispute the fact that during the decade which is rapidly coming to an end, the textile industry has made tremendous strides. Take one situation as an example. In the 1940's, there was only one non-cellulosic fiber, nylon, on the market. However, today at the end of the 1950's, there are eight producers of nylon filament yarns in the United States. There are more than half a dozen acrylic and acrylic-type fibers alone, not to mention polyester, polyolefin, and other fibers, all trying to capture a share of the textile markets.

Not to be outdone, the natural fibers as well as the older cellulosic fibers have fought back fiercely for their old markets, either through heavy promotion, through intensive research, or both. The battling of all these fibers in the 1950's has transformed whole markets, created new ones, and eliminated others. In the 1960's, the jockeying of end-use markets by these fibers is bound to be more intensified.

Take for instance another example, the whole area of wash-and-wear. This term is of relatively recent vintage. A few years ago, this term was not even known. Today, it has become a household word. Even though wash-and-wear still means different things to different people, the Bureau of the Census in 1958 reported some 1.8 billion yards of resin-finished fabrics for crease resistance. Added to this figure the half-a-billion yards of man-made fiber fabrics, woven of yarns with inherent crease-resistant characteristics, there is a figure of some 2 billion yards of wash-and-wear fabrics. Even allowing for the looseness of the term, the 2 billion yards of the so-called wash-and-wear fabrics have far-reaching marketing implications.

These two examples, among many others, should serve to remind us of the dynamism of the textile industry, as we are ushered into another exciting decade.

What can we expect in the 1960's? There are numerous areas that we can go into, but I would like to limit my discussion to three areas: *textile production, textile consumption,* and *structure of the textile industry.*

Looking ahead, or to use a more professional term, economic projection, is always difficult, as there are so many variables involved. Changes in population, income, and productivity must be taken into account, of course. On top of that, a careful analysis of trends

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Leland S. Liang

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in the textile industry is the basis for this projection. Naturally, we also assume that there will not be any major war, or any major political or economic upheaval.

Textile Production

The most commonly used indicator of textile production, although by no means the only one, is the total production of broad woven goods. During this decade, the production of broad woven goods has been such that it has varied no more than 13% between any two years. During the 1960's, it is projected that the production of broad woven goods will hit some 13½ billion linear yards, divided as follows: cotton broad woven goods, 10½ billion yards; man-made fiber broad woven goods, 2¾ billion yards; woolen and worsted woven goods, slightly more than ¼ billion yards.

Such a projection is really not so fantastic, when we remember that, in 1955, the production of broad woven goods reached a peak of 13.1 billion yards; and in both 1953 and 1956, the production figure almost reached the 13 billion-yard mark.

Besides using total production of broad woven goods as an indicator of textile production, it should not be forgotten that a great deal of textile products are not woven. All sorts of knit goods, tufted textiles and nonwovens, have been on the ascendency during this decade, and will likely continue on this course during the next decade.

Textile Consumption

Textile consumption is usually expressed in terms of per capita consumption of fibers, and total number of pounds of fibers consumed. A series of such consumption data has been developed beginning with the year 1920. Thus, we have a fairly long period of fiber consumption record.

Based on the historical trend of per capita consumption of fibers in the United States, augmented by seasoned judgment, E. T. Powers, Director of Market Planning and Development of the Chemstrand Corp., in a speech given on September 21, 1959, at the Chemical Market Research Association conference on textile fibers, estimates that the total U. S. demand in fibers should be about 6½ to 7 billion pounds in 1963, broken down as follows:

Cotton	4.00 billion lb.
Cellulosics	1.25 billion lb.
Non-cellulosics	1.00 billion lb.
Wool	0.30 billion lb.

A cursory examination of the above data reveals that the expected increased consumption of fibers is really accounted for by the share of the non-cellulosic fibers. The consumption of non-cellulosic fibers in 1958 was about 500 million pounds, and in 1959, probably a bit higher. Thus, in a span of some five years, from 1958 to 1963, consumption of non-cellulosic fibers will double itself.

In the latter part of the 1960's, it is probable that the total fiber consumption could hit 7 billion pounds annually, since the population group, 25 to 64 years of age, will reach a height of 90.5 million persons. And persons in this age group contain the important breadwinners as well as breadbuyers, and I might add, clothes buyers, too.

Structure of Textile Industry

Historically, the structure of the textile industry has been characterized by the existence of many small firms, so that no one firm or even a group of firms has the lion's share of the market. This situation is still true today, of course, as can be attested by the fact that, one of the largest fabric manufacturers, Burlington Industries' share of the textile-mill products market is estimated at some 5%. However, a slow but gradual change in the structure of the textile industry is dimly discernible, and this trend will probably continue into the 1960's.

The entrance of the chemical firms into the textile industry during the 1950's (a trend that will certainly continue into the 1960's) makes the first dent in the structure. The number of such fiber producers is really small, compared to, say, the number of spinning, weaving, and knitting mills. The result is that these fiber producers, most of whom have a chemical base, bring to the textile industry a fresh approach to many problems. An awareness of price stability; an understanding of the dire need for sales promotion and advertising; a shrewd sense in the use of marketing research, are part of the philosophy of the management of the fiber producers.

In the mill level, during the 1950's, there has been a slow but gradual tendency toward integration, either vertically or horizontally. Such a tendency will probably be continued into the 1960's.

One result of this trend is that the mill management will finally recognize that no one will gain from excessive price competition. Mill operation and output must be geared to the current state of demand, in order to have greater short-run stability of prices, and to reduce the effects of the textile cycle.

Probably during the 1960's, we will see more textile fiber producers coming into the picture, or at least, exercising a more pronounced influence on the rest of the industry. The textile industry, with some structural changes, may tend to have the long-range planning of a chemical firm and the short-run operation of a converter.

Thus far, I have sketched to you what I think will happen in the textile industry during the 1960's: production, consumption, and structure-wise. The market will be expanded during the 1960's, to be sure, and some firms will grow with the growth of the industry. The responsibility to reap the profits of a growing market rests squarely on the shoulders of top marketing management.

Four Critical Marketing Areas

There are at least four critical areas which should deserve the attention of marketing management, and these are the areas which will become even more important during the 1960's. I would like to discuss briefly these four areas and their applicability to the textile industry.

These areas are, *Market Planning; Market Segmentation; Marketing Organization, and Marketing Research.*

Market Planning

Market Planning is beginning to emerge as an area of staff specialization paralleling the earlier recognition of marketing research. As an art, it is the designing of market programs. As a science, it utilizes the systematic and orderly procedure for testing the plans against the facts.

In essence, market planning is a race against time, and it attempts to forecast the future possibilities and to design a program which will maximize the benefits to be obtained.

One of the best-known proponents of market planning is Wroe Alderson, president of Alderson Associ-

ates, Inc. According to Alderson, there are seven steps to market planning:

1. Marketing audit
2. Generation of strategies
3. Programming
4. Scheduling
5. Budgeting and controls
6. Installation procedure
7. Review and demonstration

From the vantage point of a marketing consultant, I have seen several textile firms, in this case fiber producers, utilize this technique of market planning. I am convinced that, in the 1960's, market planning will become a potent competitive weapon.

Market Segmentation

Market segmentation involves breaking up the market into segments that differ in price elasticity of demand, so that different prices can profitably be charged in different segments.

The best example of market segmentation is the recent announcement of Du Pont's "Orlon 21", which is intended for a specialized, higher-priced knitwear market. This fiber, pegged at $1.53 a pound, sells at a higher price than the other types of Orlon acrylic fiber.

Such a strategy by Du Pont might have been prompted by the fact that the core market, something like 50 million pounds of Orlon fiber for sweaters and other knitwear, has already been developed to the point where additional advertising and selling expenditures might yield diminishing returns. Cultivation of a market segment, in this case the higher-priced knitwear market, may be the correct strategy.

It is important for top management of the textile industry to recognize the significance of market segmentation, which, when properly employed, can increase total profits by expanding sales into mass markets, yet preserving rich margins in the fringe markets.

Marketing Organization

The third critical area is marketing organization. A sound marketing organization, adapted to the requirements and needs of market conditions, is the aspiration of every top management. Having a sound marketing organization at any given time is really not sufficient. What is needed is that such an organizational structure must be examined, evaluated, and adjusted at all times, against the background of the constantly changing textile market conditions.

A good example of adjusting the marketing organizational structure to the needs of the times is the recent reorganization of Owens-Corning Fiberglas Corp. Formerly, Owens-Corning was organized along two broad lines of products, a textile line and a general line, each with its own sales force. However, it was found that the salesmen from the two sales forces were running into one another more and more. In order to alleviate this situation, which is wasteful to say the least, Owens-Corning reorganized its setup by creating five new marketing divisions, each headed by a vice president who has complete charge over his particular market. In other words, the new setup of Owens-Corning Fiberglas Corp. is organized by markets, and not by products.

The Kendall Co. and Indian Head Mills, Inc., among others, have also streamlined their organizational structures, no doubt adjusting to the particular requirements of the market. During the 1960's, the need for such adjustments is bound to be more acute, and therefore this area of marketing organization deserves the unwavering attention of top management.

Marketing Research

The fourth critical area is in marketing research. Among the many tools at the disposal of top management, marketing research can be considered as fairly well established. In fact, the recent "Printers' Ink" Executive Panel Survey, polling more than 400 marketing executives, reported that marketing research is headed for a "major breakthrough" as a prime marketing tool in the 1960's.

An indication of the use of marketing research in the textile industry can be viewed from another direction. Taking Fortune Magazine's directory of the 500 largest industrial corporations, out of ten fiber producers, eight have marketing research departments. Out of 19 spinning and weaving mills, 11 have formal marketing research departments. All three of the carpet mills, and the two garment manufacturers on Fortune's list are organized to do marketing research.

There are quite a few more textile mills, carpet mills and garment manufacturers that I know of personally, not listed in Fortune's Directory, which have organized to do marketing research within the past few years.

It is fair to say that top management in the textile industry have begun to recognize the contributions made by marketing research. For instance, one large mill decided not to go into the manufacture of nonwovens, as the result of its marketing research department's report, indicating the many difficulties not likely to be overcome by the mill. Recent events in the nonwoven fabric industry prove the usefulness of this marketing research study.

In concluding this discussion, I wish to say that, in the decade just ahead, the markets for our industry are bound to be expanded. The markets will be there, but we need to be constantly alert to the critical marketing areas.

Discussion

Following the presentation by Dr. Liang of his prepared paper, there was a question and answer period during which he answered questions from the audience. The following is a summary of some of the questions and Dr. Liang's answers.

C. S. CLUTZ (Celanese Corp.): Do you see any reason for hope that a reversal will occur in the future of the current trend of the textile industry to get a smaller and smaller portion of the consumer dollar?

LIANG: There is some evidence that this trend has slowed, but I cannot see, at least for the next ten years, that the trend toward diminishing per capita consumption of textile products will be reversed.

CAMERON BAKER (Better Fabrics Testing Bureau): What are the principal factors that a market researchist will investigate in a new product, say a new fiber coming on the market?

LIANG: In market research there is really no one approach; but to take your example of a new fiber, its producer will search for markets for that fiber which have not already been staked out by a maker of a competitive fiber.

TEXTILE NEWS

World Wide

JAPAN ACTS TO CURB exports of textiles. The Textile Export Council decided in Tokyo to place the power to control all phases of exports into the hands of the various trade associations, rather than by private producer pacts as had been done heretofore. Quota limits, price and quality will all come within the trade groups' jurisdiction. The Foreign Trade and Industry Ministry, meanwhile, believes that companies which are not members of trade associations should also be made to comply with general textile export rules.

TOKYO CHECKS RAYON shipments to Australia. Shortly after the Textile Export Council acted to put teeth into the control system, the Foreign Trade and Industry Ministry ordered suspension of licenses for spun and filament rayon exports for Australia "for an indefinite period." In the first half of 1959, these exports totaled two million square yards for filament and 1.2 million for spun. The 1958 figures were 3.6 and 2.5 million, respectively.

JAPANESE RAYON GARMENT exports to North America are coming under fire. Tokyo's offer to cut back sharply on spun rayon garment shipments has been accepted by Canadian Finance Minister Donald Fleming. The Japanese shipments, Fleming said, "will be a small fraction of the monthly shipments earlier this year." The Japanese will also consult with Ottawa before the 1960 rayon and cotton export quotas are set. Women's undergarments, dress and work shirts of cotton rayon or mixed fibers are also included Meanwhile, Japanese officials have been warning their own clothing exporters not to step up shipments of men's suits to the United States. Unrestrained exports could soar to the 300,000 level in 1960, it is feared.

SWISS ARE HOLDING DOWN textile imports from such Far Eastern sources as Japan, Hong Kong and Red China. The Swiss curbs seem certain to come under criticism from other members of the the General Agreement for Tariffs and Trade (GATT). The controls are based on price. Imports will be permitted, the Swiss say, "if the price of the goods is certified;" this means if Bern feels there will be no dumping. A price 20% below the Swiss level may be the "dumping" criterion.

BRITISH UNION ACHIEVES major breakthrough in the old 44-hour week. Imperial Chemical Industries has agreed to union demands to lop two hours off the 44-hour work week. This is regarded as the first significant change in the British work week since the end of World War II. The 42-hour week will start next Jan. 2 and will cost ICI an estimated 2 million pounds sterling ($5.6 million). Some 70,000 ICI workers will be affected.

ACRYLIC FIBER OUTPUT spreads to France and Japan. Courtelle, made by Courtaulds Ltd. in the U. K., is to be produced at a plant near Calais, to be built alongside the company's French rayon affiliated, Les Files de Calais. Output is due to start early in 1961—in plenty of time to get into the European Common Market. A new company, Courtaulds France SA, has been formed. In Japan, Toho Rayon Co. is beginning a new plant to turn out 10 tons yearly of acrylic staple fiber. This fiber is known as Beslon and is said not to involve foreign licensing.

ICI GRANTS POLYESTER license to the Polish firm, Polimex. The Polish fiber will be called Elana. Another Polish firm, Textilimport, will import ICI polyester until domestic output starts in 1963-64.

US TEXTILE MARKET abroad is likely to open up over the coming months as a result of recent GATT discussions in Tokyo. Top U. S. officials, from Undersecretary of State C. Douglas Dillon on down, succeeded in impressing GATT members that U. S. will no longer tolerate trade discrimination based on balance of payments reasons. France has relaxed some import controls on U. S. textiles, as did Britain. An important dropping of textile trade barriers is expected to take place in Germany in the near future.

"MADE IN NAZARETH" label may be seen on world textile markets in a year. An Israeli cotton textile combine, including 20,000 spindles and 210 looms and costing nearly $5 million, has been completed at Nazareth. Some backing came from Rindenknecht, Swiss firm. About 85% of the cotton goods production—from yarn apparel and stressing poplin—is to be available for export. Production is due to start in January. Development of foreign markets will be keyed to production.

TWIST SETTING

spun nylon carpet yarns

by Morton Santymire,
THE DU PONT CO.

IN THE LAST FIVE YEARS nylon has gained wide acceptance as a fiber for carpets. Its use has increased from an insignificant amount in 1954 to 23 million pounds in 1958. This growth has been due to its good performance and to the attractive textures that are possible by twist-setting nylon yarns. The major increase in nylon's acceptance occurred simultaneously with the development by Du Pont of twist-setting procedures for nylon frieze yarns. Because of the thermoplastic properties of nylon, excellent durability of texture in carpets is obtained even under extreme conditions of wear and cleaning.

When twist-setting is correctly carried out on properly constructed yarns, uniform texture and uniform dyeability result. If the twist-setting variables are not controlled, streaks will be evident in carpets because of non-uniform texture and non-uniform dyeability. In the early stages of the nylon carpet development, non-uniformities in texture and dyeability were traced to improper steam-twist setting.

Following is an outline of the recommended procedure for twist-setting nylon carpet yarns with either hot water or steam. The information presented not only is applicable to nylon carpet yarns but applies wherever nylon yarns are heat-set in hot water or steam.

The procedure represents a method for applying steam uniformly to nylon yarns and may apply to other fibers or products where uniform steaming is required.

Important factors in the manufacture of spun nylon yarns for carpets are: fiber selection, yarn construction, skeining, relaxing, twist-setting, and drying. These are discussed in the following paragraphs.

Fiber Selection

Du Pont nylon Types 100 and 600 are recommended for yarns that are to be twist-set. These types of nylon, available in either staple of tow form, may be given a durable "set" by the carpet yarn manufacturer. Du Pont recommends the use of its 15-denier-per-filament carpet nylon because of its superior hand, texture retention, and resistance to matting in carpets. Any of the conventional yarn spinning systems may be used in the manufacture of nylon carpet yarns.

Yarn Size and Twist

Plied "kinky" or frieze types of yarns are made with an unbalanced twist. Cut-pile carpets of these yarns show a random mixture of visible yarn ends and sides, giving a "two-shade" appearance. Such yarns usually are of the same count and ply as are "nubby" yarns, but are given different twists, as shown in the construction details below. The twist, count, and ply selected depend upon the effect desired in the carpet. Singles, two-ply and three-ply yarns have all been used satisfactorily in frieze carpets. In selecting the desired yarn count and twist, allowance should be made in spinning and twisting for approximately 10% shrinkage during twist-setting.

Construction of Frieze Carpet Yarns

Singles Yarns	0.8 to 1.3 c.c.
2-ply yarns	2.5/2 to 4/2 c.c.
3-ply yarns	2.5/3 to 4/3 c.c.
Singles-twist and direction	2.5 tpi to 4 tpi "Z"
Ply-twist and direction	5 tpi to 8 tpi "S"

Soft cut pile carpets, similar in appearance to a saxony carpet, and hard "nubby" cut pile carpets are achieved by selecting yarns with a more nearly balanced twist. These yarns maintain their texture in carpets showing primarily the yarn ends.

Yarn Construction for Soft Texture

Yarn Size	—2.5 to 4's c.c./2 or 3 ply
Singles-Twist and Direction	—3 tpi to 4 tpi "Z"
Ply-Twist and Direction	—2.5 tpi to 3.5 tpi "S"

Yarn Construction for "Nubby" Texture

Yarn Size	—2.5 to 4's c.c./2 or 3 ply
Singles-Twist and Direction	—3.5 tpi to 8.5 tpi "Z"
Ply-Twist and Direction	—3 tpi to 8 tpi "S"

By blending varying amounts of non-heat-set Du Pont nylon (Types 100 or 600) with heat-set nylon (Types 101 or 601) and twist-setting the resultant yarns, a variety of textures and greater bulk are attainable. These yarns have good twist retention and show a greater "bloom" than that associated with yarns produced from 100% non-heat-set fibers. By plying yarns set at different temperatures, two-tone effects are obtained upon dyeing.

Skeining and Relaxation

Yarns must be twist-set in skeins. This is necessary for uniform relaxation during setting, as well as for uniform penetration of heat and moisture. Skein weight ranges from one to six pounds. The heavier skeins require a larger reel diameter to permit uniform relaxation. To determine the optimum skein leasing and tying methods for specific yarns or relaxation cycles, experimentation usually is required. It is necessary to find a compromise between tying too tightly, which would restrict the degree of relaxation, and tying too loosely, which would allow tangling.

Yarns should be skeined as soon as possible after twisting. Lagging on twister bobbins for varying periods of time causes variation in the length of the skein. This variation, if heat-set into the yarn, will cause texture streaks in carpets. Since uniform lag times are not always possible, a method for uniformly relaxing the skeins before twist setting is necessary. This relaxation or uniform development of the desired "kink" is accomplished by mechanical flexing of the skein in wash wheels or tumble dryers.

Conditioning of the skeins in a constant humidity room at 95% relative humidity or tumbling frieze yarns in an atomized water or steam spray is helpful in producing more uniform relaxation and at the same time introduces needed moisture into the yarn prior to steam twist-setting.

The following procedure is suggested for frieze-type yarns:

1. Tumble skeins for three to five minutes.
2. Turn skeins inside out, snatch and tumble again for three to five minutes.

Twist-Setting

Twist-setting of nylon carpet yarns may be carried out with either water or steam; the choice depends on the available equipment and the desired effect. In either case, the desired texture must be evident in the yarns before setting, because alteration is not practical once the yarn is set. Extremes of either tension or compression should be as randomly applied as possible. This will assure streak-free, random texture in the finished carpet.

Water Twist-Setting

Twist-setting in water is best accomplished at elevated pressures. Pressure setting may be carried out in vessels such as pressure stock dyeing kettles. Yarn which has been prepared from dyed stock will require pressure setting at a temperature exceeding the highest temperature encountered during dyeing. In this procedure, relaxed skeins are packed in a pressure vessel and scoured at 140 to 160 degrees F. to remove dirt and soil. The bath is dropped, fresh water is added, the vessel is closed, and the temperature is raised to 230 to 250 degrees F. (depending on the desired degree of set) and held for 30 to 60 minutes. To prevent excessive color bleeding when dyed yarns are being set, a small amount of acetic acid (to pH 6.0) is added to the setting bath. After setting, the bath is cooled and an antistatic finish, such as 0.5% (on weight of yarn) "Nopco" LV-40, is exhausted onto the yarn at 120 degrees F. After application of the finish, the water is extracted and the yarn dried at 130 to 140 degrees F. prior to winding.

Steam Twist-Setting

Twist-setting with pressure steam gives the advantages of a more clearly defined yarn twist plus elimination of the need for extraction prior to drying. In steam-setting, it is important from the standpoint of subsequent uniform dyeing that all process variables by under control. These variables are temperature, yarn moisture, steam moisture, temperature of the autoclave walls, air removal and steam penetration, and the sequence and length of the vacuum-steam periods. Each of these is discussed below.

Temperature. The dyeability of nylon yarn varies with the temperature at which it is heat-set. The higher the temperature the deeper the dyeing, and the better the twist retention during carpet manufacture and texture retention in use. Therefore, the maximum temperature from batch to batch and within the batch during twist-setting should be accurately controlled.

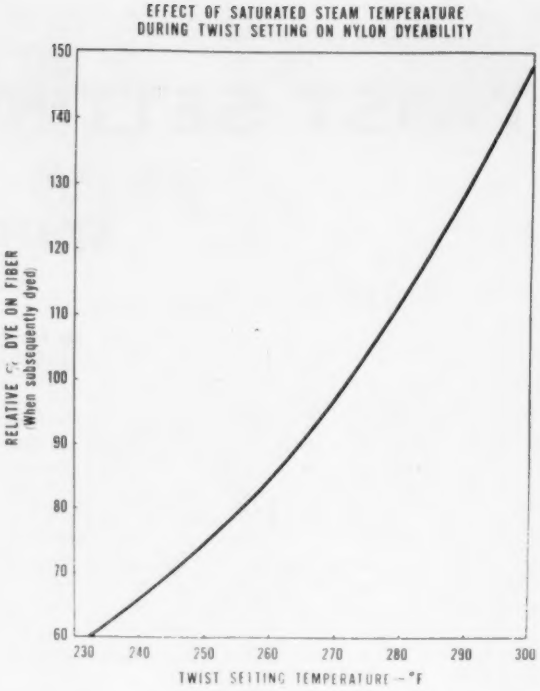


Figure 1

As shown in Figure 1, at 270 degrees F. a variation of eight degrees in temperature results in a 10% difference in the amount of dye on the fiber. A four per cent difference in the amount of dye on the fiber has caused streaks in "nubby" carpets, and an eight per cent difference has caused streaks in frieze carpets.

Yarn Moisture. To assure uniform heat relaxation, it is vital that the yarn entering the autoclave contain adequate moisture. Six percent moisture is recommended. Figure 2 shows the effect on dyeability of twist-setting yarns which contain 10, four, and two per cent moisture. Yarns which contained 10% moisture when steam-set are free from dye streaks, while yarns which contained only two per cent moisture dyed non-uniformly as indicated by the lateral light streaks. Four per cent moisture is considered borderline and leaves an inadequate operating margin for a commercial process. However, when all other possibilities of drying the yarn, such as superheated steam, lengthy vacuum cycles, and radiant heat from the walls of the autoclave are avoided, four per cent has been reported as satisfactory. Conditioning of the yarn at 95% relative humidity, tumbling in atomized water or a steam spray, and wetting out and extracting are among the methods being used to provide moisture in the yarn prior to steam setting.

Steam Moisture. Superheated steam supplied to the twist-setting vessel can cause non-uniformity in the yarn. Figure 3 shows knit tubing made from yarns set under identical conditions except that yarn in the tubing on the right was set with steam which had 40 degrees F. of superheat entering the control valve. Desuperheating devices are available commercially,

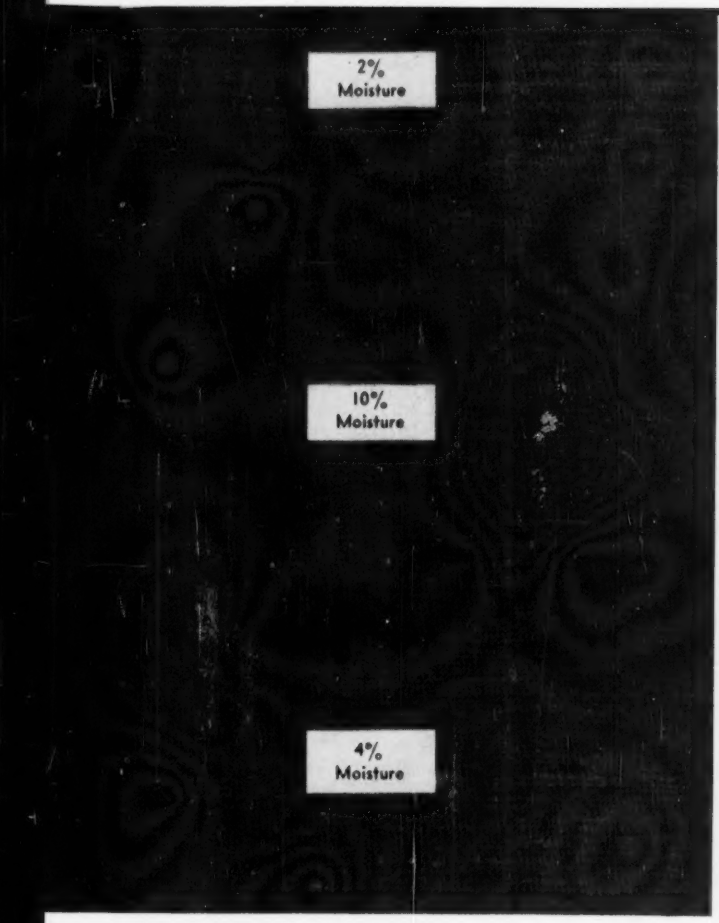


Figure 2—Results of dyeing yarn which was twist set at various moisture levels.

or can be constructed. Every effort should be made to provide saturated steam to the autoclave.

Temperature of Autoclave Walls. Any condition which causes drying of the yarn prior to steaming is harmful. Therefore, it is desirable that the temperature of the autoclave wall be no higher than 120 to 150 degrees F. when the yarn enters the autoclave so that non-uniform drying by radiant heat is prevented. Figure 4 shows the effect of radiant heat from the autoclave walls on yarn being steam-set.

Localized heating in high vacuum causes localized drying. This results in non-uniform relaxation and dyeing. The following table shows the loss of moisture under various vacuum conditions from yarns which had been heated to different temperatures prior to entry into the autoclave.

Table I. Moisture with 28 Inches Vacuum and Temperature

Minutes Vacuum Applied	Per Cent Original Moisture	Per Cent Final Moisture	Entering Temperature of Yarn
3	3.5	3.4	75 degrees F.
10	3.5	3.13	
20	3.5	2.99	
3	3.5	2.45	140 degrees F.
5	3.5	2.30	
10	3.5	2.15	
20	3.5	1.75	

Figure 5 shows the increasing non-uniformity when the variables are not controlled. Yarn used for the knit tubing on the left contained four per cent moisture, and was otherwise set under optimum conditions. Proceeding from left to right, the effect of superheated steam and radiant heat are shown. For the tubing on the right, the yarn was set with 40 degrees F. superheated steam after being directly exposed to the hot autoclave walls under vacuum for a period of thirty-five minutes prior to steaming.

Spraying the autoclave walls with water to cool them, and protecting the yarns by reflective shields are methods being used to prevent the action of radiant heat in drying the yarn prior to steaming. When spraying the walls, care should be taken to avoid damage to the vessel by shocking with a sudden temperature change.

Air Removal and Steam Penetration. *It is necessary to pull the maximum vacuum as rapidly as possible, and when the vacuum is reached to admit the steam*

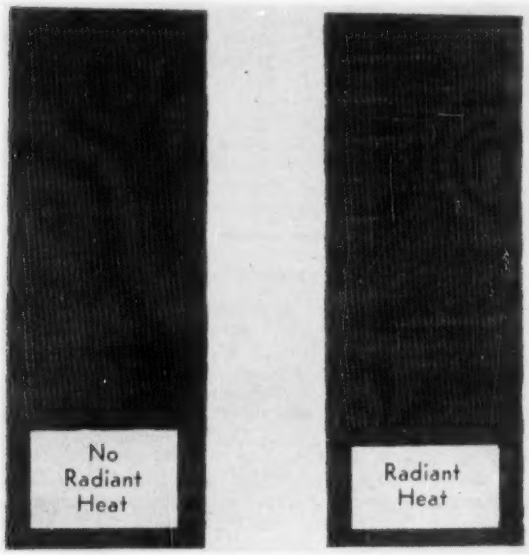


Figure 3—Effect of superheated steam on dyeing uniformity.

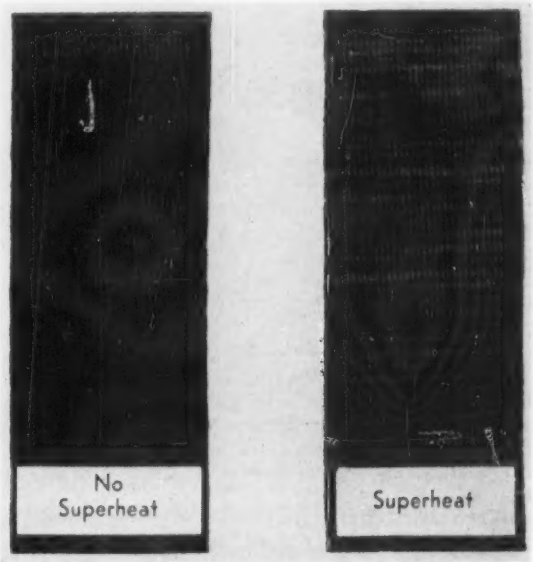
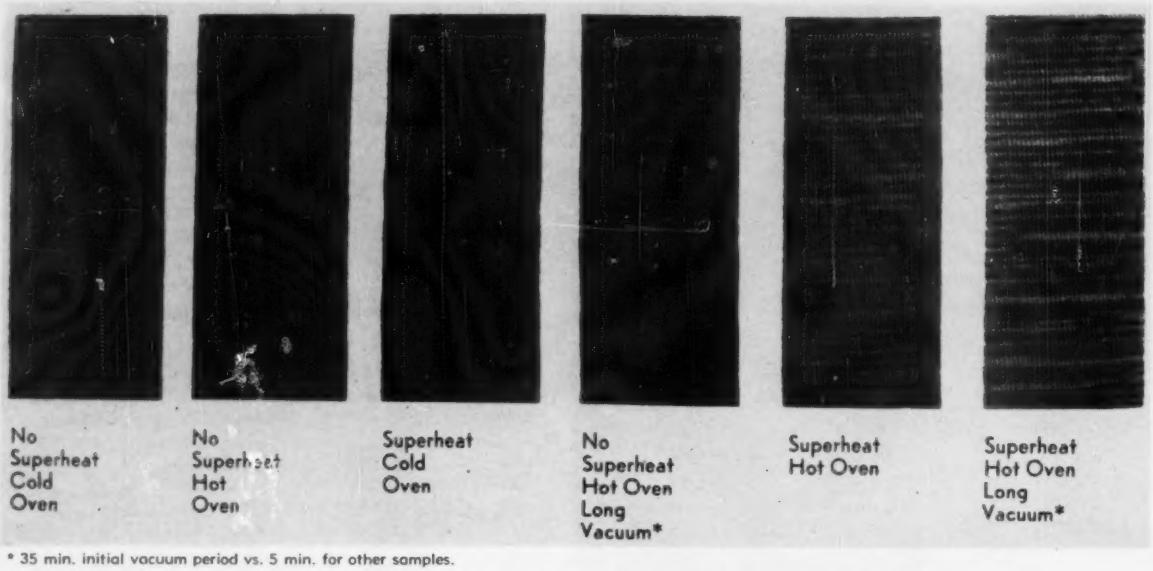


Figure 4—Effect of radiant heat on dyeing uniformity.


No Superheat Cold Oven
No Superheat Hot Oven
Superheat Cold Oven
No Superheat Hot Oven Long Vacuum*
Superheat Hot Oven
Superheat Hot Oven Long Vacuum*

* 35 min. initial vacuum period vs. 5 min. for other samples.

Figure 5—Relative effects of radiant heat and/or superheated steam on dyeing uniformity.

without delay. Extended pre-vacuum periods cause dangerous drying of the yarn. To get uniform steam penetration to all portions of the load, it is necessary to remove air first with a good pre-setting vacuum. Satisfactory results have been obtained using a pre-setting vacuum of 26.5 inches of mercury, while at pre-setting vacuums of less than 26.5 inches non-uniform dyeing yarn has resulted.

Sequence of Vacuum-Steam Periods. While the sequence of vacuum-steam periods used is a custom operation which must be established by experimentation with the equipment to be used, the following sequence is given to illustrate one such sequence which has worked satisfactorily using a Turbo Fibersetter, Model FS-60:

1. Vacuum (27 inches of mercury)—1 minute at maximum
2. Steam (270 degrees F.) —2 minutes at pressure
3. Exhaust to approximately 2 psi gauge—½ to 1 minute normally required
4. Steam (270 degrees F.) —2 minutes at pressure
5. Exhaust to approximately 2 psi gauge—½ to 1 minute normally required
6. Steam (270 degrees F.) —2 minutes at pressure
7. Exhaust to approximately 2 psi gauge—½ to 1 minute normally required
8. Steam (270 degrees F.) —5 to 10 minutes
9. Vacuum —5 minutes

The four steaming periods assure uniform twist-setting temperatures throughout the load. The return to two psi gauge between steaming purges the spent steam prior to the introduction of new steam. The final vacuum serves to cool the yarn and the autoclave, and helps to remove the moisture of condensation.

When using larger autoclaves, such as one of the various Caston County "Hy-Vacuum" Pressure Autoclaves (which may take up to 1500 pounds per load), the twist-setting principles just discussed are equally applicable. Naturally, the vacuum, steam, and lag times will vary with the equipment and the load, and as a result must be worked out on an individual basis at each installation.

When establishing the steam-vacuum cycle for any piece of equipment, it is suggested that thermocouples be used to make certain that the temperature through the skeins, and from skein to skein reaches a uniform maximum.

When yarns have been non-uniformly twist-set because of lack of control of any of the above variables, it is possible to remove the non-uniformities by resetting at a higher temperature with all of the variables under control.

Drying

Drying after twist-setting is necessary to prevent wet winding and consequent texture streaks. A variety of tumble dryers and hot air ovens are used. Temperatures of 180 degrees F. for 30 to 60 minutes have resulted in satisfactory drying without harmful effects to the yarn. Prior to winding, the yarn should be lagged to permit normal moisture regain.

Minimum and uniform tensions should be used during winding since variations in tension during winding will also cause texture streaks.

Acknowledgment:

The assistance of G. M. Richardson, R. F. Wilhide, R. E. Davis, W. N. Potter III, and F. A. Lang in developing this information and preparation of this paper is acknowledged and greatly appreciated.

AATT Meetings Planned

A paper on the construction of wash-wear fabrics for maximum performance properties will be presented at the Jan. 6 meeting of the American Association for Textile Technology by Dr. Walter Hamburger of the Fabric Research Laboratories in Dedham, Mass. The meeting will be held at the Hotel Vanderbilt in New York City and will start with dinner at 6:30 P.M.

At the Feb. 3 meeting at the Hotel Vanderbilt J. B. Goldberg will present a paper on Alon, a new acetylated viscose rayon fiber. Nonmembers are invited to attend both meetings. Reservations may be made by contacting Miss Bernice Bronner, Secretary, at 100 West 55 Street, New York 19, N. Y., PL. 7-4233.

TEXTILE — NEWS BRIEFS

William Ix, Jr.

Ix Heads TSA

William Ix, Jr. has been elected president of the Textile Salesmen's Association to fulfill the term of the late Daniel Sheridan. Ed Hunter was elected to the Board of Governors for the same period. Ix, previously vice-president of T.S.A. is vice-president and general sales manager of Frank Ix & Sons.

National Appoints Hayes

National Drying Machinery Co., Philadelphia, Pa., has appointed Hayes Textiles, Inc., Spartanburg, S. C., as its southern agent for sales of "National" loop, tenter, roll, piece goods, skein, heat setting, curing and other drying and conditioning machinery.

Davison's Blue Book

The new 1959 edition of Davison's Textile Blue Book has been issued by the Davison Publishing Co., Ridgewood, N. J. It is the 94th year in which an edition has been published. Reported on in detail are 8,470 separate textile plants; the mills are listed geographically and also by products. The Blue Book is widely used as a valuable reference for quickly finding new sales prospects. The large deluxe office edition is priced at $9.75, and the small handy edition at $7.25.

Drapery Design Contest

Edwin Raphael Co., Inc., Holland, Mich., has announced a drapery design contest open to art students in U.S. colleges and universities. The contest, which offers $1,000 in prizes, is to encourage art students to enter the contemporary design field. It ends May 1, 1960, with award winners to be named in June, 1960. *For further information write the editors.*

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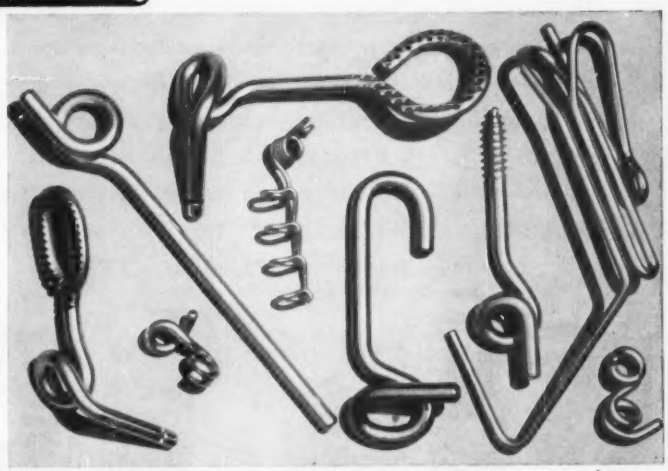

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Keeping pace with new fiber development...

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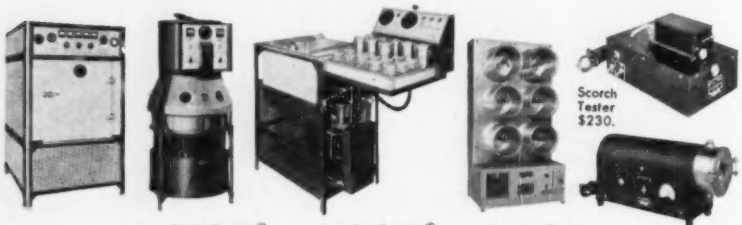

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Sales representatives in principal cities throughout the world

Machine Productivity Book

Thomas F. O'Connor has published his new book, "Efficiency and Productivity Tables for Textile Machine Operation." The author reports the book is based on his consulting work for a number of southern mills, where his system is now in use. Fifty-seven pages of closely printed tables show standard machine efficiencies, productivity factors and workloads under varying machine assignments and work conditions. The book, at $25 per single copy or at $17.50 per copy if two or more are ordered at one time, may be obtained from the author at P. O. Box 3228, University Station, Charlottesville, Va.

Garment Quality Control

The National Knitted Outerwear Association has published a book covering the development of a quality control system applicable to garment production. The book is the result of a research project initiated by the association more than a year ago. Bertrand Frank Associates was retained to develop a practical system useful in the production of knitwear and swimwear. The system recommended is deemed to be applicable throughout the field of garment manufacture.

Copies of the book have been distributed to all members of the association. The book may be purchased by others by ordering from the Association at 386 Park Ave. South, New York City.

Tire Yarn Prices Cut

Industrial Rayon Corp., Beaunit Mills, Inc., and American Viscose Corp. have reduced prices 4 to 5 cents a pound for Tyrex viscose tire yarn. The 1100 denier yarn is now priced at 62 cents a pound and at 55 cents in 1650 denier. Avisco also announced the price of its 1650 denier Super Rayflex has been reduced to 54 cents a pound.

Backs for Tufteds

"Back Talk" is a booklet on the subject of backs for tufted carpets. It is published by Patchogue-Plymouth, developers of Patchogue Bac, a bonded double back designed to stabilize tufted carpets and to solve the problem of their stretching, wrinkling or buckling. *For a free copy, write the editors.*

"The Fiber Story"

"The Fiber Story" by Charles H. Masland, 3rd, vice president for engineering of C. H. Masland & Sons, is a booklet that clarifies the varieties of fibers used in carpet, what they are, how they are colored, and their performance characteristics. It also gives definitions of terms relating to carpet fibers and tells of carpet characteristics. *For a copy write the editors.*

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in November 1959. All prices are given as subject to change without notice.

CELLULOSIC YARNS

ACETATE

American Viscose Corp.

Current Prices

Effective March 13, 1959

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
40/11	....	....	....	....	$1.04
45/11	....	....	....	....	.93
55/14	$ .99	$ .97	$1.00	....	.77
75/20	.95	.93	.96	$ .89	.90
100/28	.91	.89	.92	.85	.86
120/32	.82	.80	.83	.76	.77
150/41	.74	.73	.75	.69	.70
200/54	.70	.69	.71	.66	.67
300/80	.66	.65	.67	.62	.63

* Standard Twist 2¢ Additional.

Terms: Net 30 Days.

Celanese Corp. of America

Current Prices

Effective March 10, 1959

Bright & Dull

Denier and Filaments	Intermediate Twist 4 & 6-Lb. Cones	Beams	4-Pound Cheeses	Spinning Twist Cones	Beams	0 Twist Tubes
45/13	$1.12	$1.13	$	$	$	$ ....
75/20	.95	.96	....	.89	.90	.79
75/50	.97	.98	....	....	.92	.84
100/26-40	.91	.92	....	.85	.86	.77
120/40	.82	.83	....	.76	.77	....
150/40	.74	.75	.74	.69	.70	.66
200/52	.70	.71	....	.66	.67	....
300/80	.66	.67	....	.62	.63	.60
450/120	.66	.67	....	.62	.63	....
600/160	.65	.66	....	....	....	....
900/80-240	.63	.64	....	....	....	.61

150 Denier 12-TM Tubes ..... .73

2-Pound Cheeses ..... .01 Less Than 4-Pound Cheeses

2-BU and 4-BU Tubes ..... Same Price as 4 and 6-Lb. Cones

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgements of orders.

Celaperm Filament Yarn Prices

Denier and Filaments	Intermediate Twist 4 & 6-Lb. Cones	Beams	Spinning Twist Cones	Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94	....	....	....

Celaperm Black Yarn Prices

Effective March 11, 1955

Denier and Filaments	4 & 6-Lb. Intermediate Twist Cones	Beams	Spinning Twist Cones	Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

Denier & Filament	Zero Twist Tubes	Beams	Low Twist Cones	Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	4 & 6 Lb. Tw. Tbs.	Cones	Bms.
40-13	$1.06	$1.13						
45-13	.94	1.02		$1.11				
55-18	.82	.86		.91			$.99	$1.00
55-24	.82	.86		.91			.99	1.00
75-24	.79	.89		.90		$.93	.95	.96
75-50				.92		.95	.97	.98
100-32	.77	.85		.86		.89	.91	.91
120-50	.73	.76		.77		.81	.82	.83
150-40	.66	.69	$.69	.70	.74	.74	.74	.75
200-60/64	.65		.66	.67	.70	.70	.70	.71
240-80			.67				.71	
300-80	.60	.62	.62	.63	.66	.66	.66	.67
450-120	.61		.62	.63	.66	.66	.66	.67
600-160					.65		.65	.66
900-44					.63		.63	.64
900-240	.61				.63		.63	.64
1800-88					.61		.61	.62
2700-132					.61		.61	.62
3000-210					.61		.61	.62

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Intermediate Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Color-Sealed

Denier & Filament	Zero Twist Tubes	Beams	Low Twist Cones	Beams	Intermediate Twist Twisted Tubes 2 Lb.	4 & 6 Lb.	Cones	Beams
55-18	$1.245	$1.315		$1.32	$1.35	$1.35	$1.37	$1.38
75-24	1.18	1.28		1.29	1.32	1.32	1.34	1.35
100-32	1.14			1.23	1.26	1.26	1.28	1.29
150-40	1.03	1.06	1.06	1.07	1.10	1.11	1.11	1.12
200-64	1.00			1.02	1.04	1.05	1.05	1.06
300-80	.95	.97		.98	1.00	1.01	1.01	1.02

(A) Regular Twist—Add $.02 to Intermediate Twist Price.

Black

Denier & Filament	Zero Twist Tubes	Beams	Low Twist Cones	Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	4 & 6 Lb. Tw. Tbs.	Cones	Beams
40-13	$1.215	$1.285						
55-18	1.045	1.115		$1.12		$1.15	$1.17	$1.18
75-24	.98	1.08		1.09		1.12	1.14	1.15
100-32	.94			1.03		1.06	1.08	1.09
150-40	.83	.86	.86	.87		.91	.91	.92
200-60	.80		.81	.82		.85	.85	.86
300-80	.75	.77	.77	.78	.81	.81	.81	.82
450-120				.76	.79	.79	.79	.80
600-160				.74	.77	.77	.77	.78
900-240, 44				.74	.74	.74	.74	.75

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Int. Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Specialty Yarns

Type 20	Same Price as Regular Yarn
Type C	Same Price as Regular Yarn

Thick & Thin

Denier & Filament	Natural Cones	Beams	Black Cones	Beams	Color-Sealed Cones
200-64 Int. Twist	$1.05	$	$1.15	$	$1.35
200-64 Reg. Twist	1.08	1.09	1.17	1.21	....

Terms: Net 30 days. Subject to changes without notice.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective March 13, 1959

"Estron"* Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Beams	Intermediate Twist Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Tricot Beams Span Twist	Zero Twist
55/13	$1.01	$1.02	$0.99	$1.00	$0.93	$0.94	$0.82	$0.87	$0.86
75/19	.97	.98	.95	.96	.89	.90	....	.90	....
75/49	.99	1.00	.97	.98	....	....	....	....	....
100/25	.93	.94	.91	.92	.85	.86	....	....	....
120/30	.84	.85	.82	.83	.76	.77	....	....	....
150/38	.76	.77	.74	.75	.69	.70	.66	....	....
200/50	.72	.73	.70	.71	.66	.67	....	....	....
300/75	.68	.69	.66	.67	.62	.63	.60	....	....
450/114	.68	.69	.66	.67	.62	.63	....	....	....
600/156	.67	.68	.65	.66	.62	.63	....	....	....
900/230	.65	.66	.63	.64	....	....	.61	....	....
Heavier	....	....	....	....	....	....	.56	....	....

Current Prices—December 19, 1955

"Chromspun"*—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.30	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900/230	....	....	.94	.95	....	....

Current Prices

"Chromspun"*—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.
Prices on special items quoted on request.
Terms: Net 30 days. Payment—U. S. A. dollars.
Transportation charges prepaid or allowed to destination in continental United States except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.
* "Estron" is a trade-mark of the Eastman Kodak Company.
* Chromspun is a trade-mark of the Eastman Kodak Company.

RAYON

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Turn Skeins	Turned* Skeins & Cones	8½ Turns	High Turn Skeins & Cones 12 Turns	15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	....	$2.08
50/36	1.29	1.55	....	....	....	1.85
65/45	1.22	1.38	....	$1.61	....	1.66
76/60**	1.11	1.25	....	1.48	$1.53	1.56
100/74**	1.02	1.15	....	1.40	1.45	1.51
125/60	1.01	1.12	$1.16	1.37	....	....
150/120	.99	1.08	1.18	1.33	....	....
300/225	....	1.01	....	....	1.14	....
900/372	....	.91	....	....	....	....
1800/744	....	.91	....	....	....	....

* Turn includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.
** Spun Dyed Cupracolor Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Turn Tubes	No Turn Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Cones	15 Turn Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.05	1.05	....	....	....	....	....
65/45	1.13	....	....	....	....	$1.50	....
75/45*	1.04	....	$1.15	$1.15	$1.38	1.38	$1.46
100/60*	.96	....	1.10	1.10	1.30	1.30	1.38
125/60	.91	....	1.06	1.06	....	....	....
150/90*	.83	....	.87	.87	1.21	1.21	1.30
150/120	.87	....	....	.99	....	....	....

* Available also in Spun Dyed Cupracolor Black at 15¢ per lb. extra.

"44" HH "Parfe" Spool Spun Yarn

Den/Fil	No Turn Cones	5 Turn Cones	5 Turn Beams	12 Turn Cones	15 Turn Cones
50/36	$1.60	$1.85	$1.85	....	....
75/45	1.48	1.58	1.58	1.78	1.88
100/60	1.38	1.48	1.48	1.68	1.78
150/90	1.21	1.28	1.28	1.63	1.73
300/120	1.21	1.28	....	....	....

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Turn Natural Cones	2½ Turn Cones*	5 Turn Natural Cones	5 Turn Cones*
1515	160/90	....	....	$1.50	$1.40
1519**	155/90	....	....	1.50	1.40
2008	200/120	....	....	1.11	1.01
3002	315/180	$1.15	$1.05	....	....
4011	410/224	1.15	1.05	....	....
6001	600/360	1.13	1.03	....	....
8001	860/450	1.13	1.03	....	....

* Basic price for cones when dyed. Dyed Colors 30 and 35 cents above basic price. Prices based on 200 lb. dyed lots only. Prices for natural yarn skeins same as natural cone prices.
** Code 1519 can be run in warp or filling.

CUPIONI Type B

Code	Den/Fil	2½ Turn Cones
9650	70/45	$1.69
9660	100/60	1.53
1545	150/90	1.30
9730	285/135	1.15
9782	450/225	1.15
9814	600/372	1.12
9837	940/372	1.02

"Spun Dyed Cupracolor is spun 150, 285, and 940 deniers at 35¢ per pound extra. Cupracolor Black Comes in all deniers."

STRATA SLUB

Code	Den/Fil	Turned Cones	Price
9747	275/225	3½	$1.25
9798	450/372	2½	1.15
9823	600/372	2½	1.10
9847	960/372	2½	1.02
9885	1290/372	1½	1.00
9934	2680/744	1½	1.00

"Spun Dyed Cupracolor is spun in 600 and 960 deniers at 35¢ per pound extra."

FLAIKONA

Code	Den/Fil	Turned Cones	Price
9669	150/148	2½	$1.35
9769	300/224	2½	1.25
9782	450/270	2½	1.05
9809	600/360	2½	1.05
9840	900/450	2½	1.00
9924	2000/744	2½	.95

"Spun Dyed Cupracolor Black 35¢ per pound extra."
Terms: Net 30 days, F. O. B. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F. O. B. delivery point.

American Enka Corp.

Current Prices
Effective June 29, 1959
Standard Quality Yarns

Standard Quality Rayon Yarns

NATURAL

Den./Fil.	Luster	Turns	Weaving Cones	Weaving Beams	Skeins Long	Skeins Short	Cakes	Knitting Cones	Knitting Tubes
50/18	E	5 S					1.52	1.63	
50/20	B	2.5 S					1.02		
75/10	B	3 S&Z						1.14	
75/18	E	4 S							
75/30	B	2.5,4S&Z	1.14	1.14	1.22	1.31	1.02		
75/30	B	8 S	1.24		1.39	1.49	1.12	1.24	1.29
75/45	P,E	2.5, 4,5S&Z	1.14	1.14	1.22	1.31	1.02	1.14	
75/60	B,P	3,4 Z	1.16				1.04		
100/14	B	3 S&Z				1.15	.90		
100/40	B,E	12 S						1.29	
100/40	B,P,E	4,5 S&Z		.98			.90	.98	
100/40	B	6 S	1.17		1.26	1.36	1.09		
100/40	B,P	2.5,4S&Z	.98	.98	1.07	1.15	.90		
100/60	B	4 S&Z					.90		
100/60	E	2.5 S	1.00	1.00			.92		
125/40	E	3 Z					.87	.90	
125/50	B,P	3 S	.96	.96					
150/40 Semi H.T.	E	3 Z	.84						
150/40	B,P,E	2.1,3S&Z	.82	.82	.91	.98	.78	.82	
150/40	B,E	5 S&Z	.90	.90	1.10	1.20	.86		
150/40	B,P,E,	8 S&Z	.95	.95	1.15	1.25	.91		
150/90	E	2.1 S&Z	.83	.83			.79		.94
200/40	P	3 Z	.81	.81	.90	.97	.77	.81	
200/40	B	8 S				1.06	.94	.98	
250/60	P,E	2.4 Z			.89	.96		.80	
300/30	E	3 S	.81	.85					
300/50	B,E	3 S	.73	.76					
300/60,120	B,P,E	2.1 S&Z	.73	.73	.79	.86	.71	.73	
300/60	B	3.5 S	.73	.73	.79	.86	.71		
300/60	B	6 S	.83	.83		.94	.81		
300/40,120H.T.	B	2.5, 3,4S	.75	.75			.73		
450/80	B,E	3 S	.69	.71	.76	.83	.67		
600/80	B,E	3 S	.73	.75					
600/120	B	3 S	.69	.71	.76	.83	.67		
900/120	B	3.4 S	.69	.71	.76	.83	.67		
900/120H.T.	B	3.6 S	.71	.71			.69		

B = Briglo
P = Periglo (Semi-Dull)
E = Englo (Dull)
H.T. = High Tenacity

Jetspun® (Colored Yarns)

Den./Fil.	Tenacity	Turns	Weaving Cones	Weaving Beams	Colors
100/40	Regular	2.5S	$1.35	$1.35	All
150/40	Regular	2.1S	1.17	1.17	All
200/40	Regular	8.3S	1.28	1.28	All
300/40	Regular	3.4S	1.09	1.09	All
300/120	Regular	2.1S	1.09	1.09	All
450/80	Regular	3.0S	1.05	1.05	All
600/80	Regular	3.4S	1.04	1.04	All
300/40	High	3.4S	1.11	1.11	All
600/80	High	3.4S	1.07	1.07	All
900/120	High	3.4S	1.06	1.06	All

® Registered Trade Mark for American Enka Solution-dyed Rayon Yarn.

Skylaft (Lofted Rayon Filament Yarns) Natural and Jetspun®

Denier	Denier per Filament	Twist	Cones or Tubes Natural	Cones or Tubes Black	Cones or Tubes Other Colors
1000	7.5	3.5S	$.92	$1.17	$1.17
2200	15	3.5S&Z	.67	.77	.84
2700	15	3.5S&Z	.67	.77	.84
4300	15	3.0S&Z	.66	.76	.83
5300	15	3.0S&Z	.65	.75	.82

American Viscose Corp.

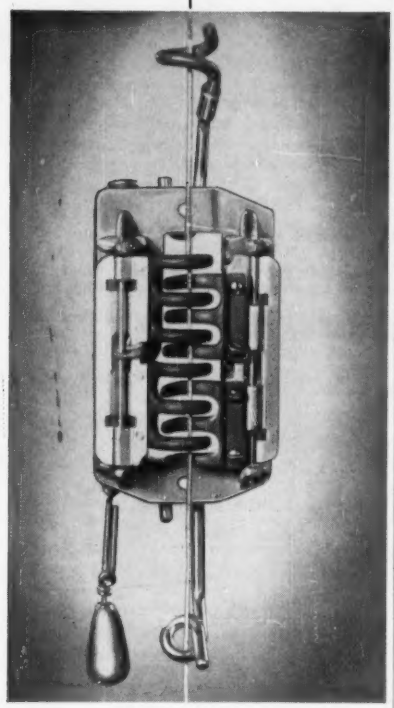
Effective October 13, 1959

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	Cones - Tubes	Beams Spools	Cakes
		Regular Turns					
75	10-30	Bright	$1.41	$1.32	$1.14	$1.14	$1.02
75	30	Dull			1.14	1.14	1.02
100	14-40	Bright	1.23	1.15	.98	.98	.90
100	60	Dull			1.00	1.00	.92
150	24-40	Bright	1.03	.96	.82	.82	.78
150	40	Semi-Dull	1.03	.96	.82	.82	.78

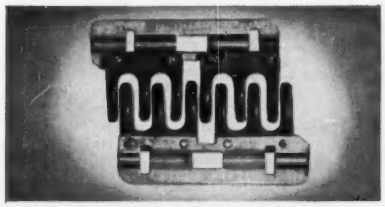
try HEANIUM®

HEANIUM TENSION FINGERS AND PIGTAILS FOR TENSION ASSEMBLIES ELIMINATE YARN DAMAGE



If guide wear is a problem in your mill . .

try HEANIUM T-3-F FINGER ASSEMBLIES



HEANY INDUSTRIAL CERAMIC CORP.
NEW HAVEN 3, CONNECTICUT

Southern Representative: R. L. Carroll, P. O. Box 1676, Greenville, S. C.

Textile Testing Prices

United States Testing Co., Inc., has issued a new price list covering its services in the textile field. Some of the services include abrasion, aging, carpet colorfastness and hosiery testing; fabric construction and performance; fiber identification and composition, wash-and-wear and effect studies. *For free copies of the price list write the editors.*

S. B. Salveson T. J. McGann

Thomas J. McGann and **Sigurd B. Salvesen** have been elected vice presidents and **John Duncan,** assistant vice president, of James Talcott, Inc.

Raymond J. Fontaine, Jr. has been appointed general merchandise manager of the spun synthetics division of American Thread Co.

Joe E. Spearman has joined the research and development division of Callaway Mills Co. as a product development engineer at the Hillside plant.

Robert H. Hundley, Jr. has been named general superintendent of Corlin Processing Co., Inc.

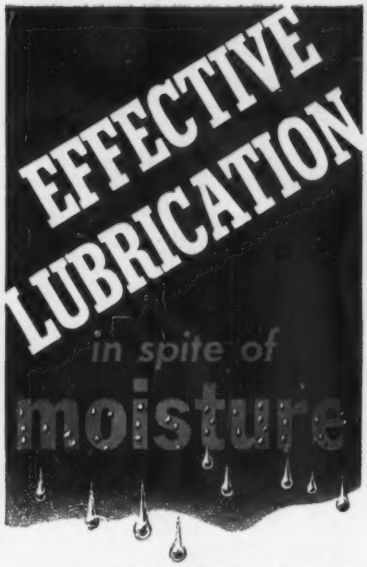
Irvin L. Payne has been appointed assistant general superintendent of the grey manufacturing operations of Dan River Mills in Danville, Va. Succeeding him as superintendent of the Alabama division is **Louis DeLoach.**

Roger Lewis has been elected to the newly-created post of assistant to the vice president in charge of new products at Deering Milliken Research Corp.

Dr. Crayton K. Black has been named manager of the trade relations section of Du Pont's Dyes and Chemicals Division, succeeding **Paul K. Lawrence,** retired. **Mrs. Jane Stewart Denton,** manager of Du Pont's public relations department in New York has assumed an additional post as director of fashion information.

Clinton W. Lee has been appointed New England district manager for Onyx Oil & Chemical Co.

Mitchell Carlisle has been named manager of Seminole Mills succeeding **Jackson L. Weldon.**



LUBRIPLATE Lubricants provide superior lubrication even in the presence of moisture and steam. They permit high speed operation, have exceedingly long life and do not break down. There is a LUBRIPLATE Lubricant, ranging from the lightest oils to the heaviest greases, to meet every requirement of the textile industry.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

150	40	Dull	....	....	.82	.82	.78
150	90	Dull	....	....	.83	....	.79
200	10-44	Bright	1.01	.94	.81	.81	.77
250	60	Semi-Dull & Dull	1.00	.93	.80	.80	.77
300	15	Bright	....	.85	.78	.78	....
300	30	Dull Flat Filament	....	....	....	.85	....
300	44	Bright & Dull	.89	.82	.73	.73	.71
300	234	Dull	....	....	.83	....	.81
450	60-100	Bright	....	.78	.69	.71	.67
600	100	Bright & Dull	....	.78	.69	.71	.67
900	50-100-150	Bright	....	.78	.69	.71	.67
1200	75	Bright	....	.78	.69	.71	....
2700	150	Bright	....	.78	.69	.71	....

Extra Turns Per Inch

150	40	Bright	6-Turns	$1.25	$1.15	$ .90	$ .90	$ .88
200	44	Bright	6-Turns	....	1.05	.96	.96	....
300	15	Bright	5-Turns	....	....	.86	.86	....
300	44	Bright	4.3-Turns	....	....	.81	....	.79
300	44	Bright	6-Turns	.97	.90	.86	.86	.84
300	120	Rayflex	6-Turns	....	....	.93	.93	....
600	30	Bright	5-Turns	....	.86	.82	.82	.80

Rayflex Yarns

150	40-60	Rayflex	$	$	$ .85	$ .85	$ .81
200	75	Rayflex	....	....	.84	.84	.80
300	60-120	Rayflex	....	....	.75	.75	.73
450	120	Rayflex	....	....	.71	.71	.69
600	234	Rayflex	....	....	.71	.71	.69
900	350	Rayflex	....	.80	.71	.71	.69

Thick & Thin Yarns

150	40-90	Bright & Dull	$	$	$1.18	$	$ ....
200	75	Bright & Dull	....	....	1.08	....	....
300	120	Bright & Dull	....	....	.98	....	....
450	100	Bright & Dull	....	....	.92	....	....
490	120	Bright & Dull	....	....	.98	....	....
900	350	Dull	....	....	1.03	....	....
920	120	Bright & Dull	....	....	1.03	....	....

Colorspun Yarns

Denier	Type	Cones/Tubes Beams/Spools
75	Regular Strength	$1.71
100	Regular Strength	1.35
150	Regular Strength	1.17
200	Regular Strength	1.14
300	Regular Strength	1.09
450	Regular Strength	1.05
600	Regular Strength	1.05
900	Regular Strength	1.05
300	High Strength	1.11
450	High Strength	1.06
900	High Strength	1.06
300	Regular Strength 5-Turns	1.19

Avicron Yarns

Avicron Yarns

Denier	Filament		Cones/Tubes Beams/Spools
1800	100-200	Singles & 2 Ply	$.68
2700	150-300-980	Singles & 2 Ply	.65

Viscose Filament Yarns

The following material deposit charges are required:

Metal Section Beams	$170.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.

Celanese Corp. of America

Current Prices

Effective June 24

Viscose Rayon Filament Yarn Prices—Bright and Dull

Denier/Fil/Twist		Beams	Cones	Cakes
75/30/3			1.10	.98
100/40/2Z		.97		
100/40/3			.96	.88
100/40/5			1.02	
100/60/2Z	NS		.96	
100/60/3			.98	.90
125/40/2Z		.93		
125/40/3			.94	.85
150/40/0	NS		.74½	
150/40/2Z		.81		
150/40/3			.79½	.76
150/40/5			.90	.86
150/40/8			.95	.91
150/90/0	NS		.77½	
250/60/0	NS		.74	
250/60/3			.80	.77
300/50/0	NS		.70	
300/50/2Z		.72		
300/50/3			.70½	.69
450/120/0	NS		.67	

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U. S. A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept. Current Prices

Effective with orders June 24, 1959

Bright and Dull

Den.	Fil.	Turns/Inch Up to		Cones (A) Beams	Cones (A) Tubes	Cakes
40	20	3	Textile "Cordura"*		$1.97	$1.92
50	20	3			1.70	
50	20	3	Textile "Cordura"		1.72	1.67
50	35	3	Textile "Cordura"		1.77	
75	10	3	Bright			1.02
75	30	3		$1.14	1.14	1.02
100	15	3	Bright			.90
100	40	3	Bright	.98	.98	.90
100	60	3	Dull		1.00	.92
125	50	3		.96	.96	.87
150	40	3		.82	.82	.78
150	60	3	Bright	.82	.82	.78
150	60	3	Textile "Cordura"		.875	.845
150	90	3	Dull		.83	
150	100	3	Dull		.83	
300	50	2.5		.73	.73	.71
300	120	3	Textile "Cordura"	.74	.74	.72
450	72	3		.71	.69	.67
600	96	3	Bright	.71	.69	.67
600	240	3	Textile "Cordura"	.72	.70	
900	50	3	Bright	.71	.69	.67
900	144	3	Bright	.71	.69	.67
1165	480	3	Textile "Cordura"	.72	.70	.68
1800	100	3	Bright		.69	
2700	150	3	Bright	.71	.69	

Thick and Thin

100	40	3	#7 Bright		1.42	
150	90	3	#7 Bright		1.08	
200	80	3	#7 Bright		1.08	
450	100	3	#7 Bright		.92	
1100	240	3	#60 Bright		1.03	
2200	480	3	#60 Bright		.98	

Monofils

150	1	3	Bright	1.35	1.35	
300	1	3	Bright	1.15	1.10	
600	1	3	Bright		1.00	

Plush

300	30	3	Dull	.85	.81	

(A) 2¢/lb. additional for cones less than 3#.

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

* "CORDURA" and "SUPER CORDURA" are Du Pont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective June 29, 1959

Continuous Process Textile Yarns

Denier	Filament	Turns per In.	Type	Beams	2.8# Cones	4.4# Cones and Tubes
150	40	2.5"S"	Bright	.82	.82	
200	20	2.5"S"	Bright	.81	.81	
300	44	2.5"S"	Bright	.73	.73	
450	60	2.0"S"	Bright	.69		.69
600	90	1.5"S"	Bright	.69		.69
900	50	2.0"S"	Bright	.69		.69
900	150	2.0"S"	Bright	.69		.69
1100	480	2.0"Z"	Bright extra strong	.66		.66

Lustre #4 is semi-dull.

Prices are subject to change without notice.

Strawn Monofilament

Denier	Filament	Turns per In.	Type	4.4# Cones	Spools and Tubes
450	1	0	Bright and Dull	1.00	1.05
450	1	2	Bright and Dull	1.00	1.05
1250	1	0	Bright and Dull	1.00	1.05
1250	1	2	Bright and Dull	1.00	1.05

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points in continental United States except Alaska.

Prices are subject to change without notice.

North American Rayon Corp.

Current Prices

Prices Effective July 3, 1959

Denier/Filament	Twist	Knitting* Cones	No Twist Knitting Cones	Weaving Cones, Velvet Cones, Beams, Tubes**	Untreated Cakes
Normal Strength Yarns — NARCO					
75/30	3.5			1.14	1.02
75/30	7			1.27	
75/30	12			1.35	
75/30	15			1.37	
75/30	20			1.40	

Neufeld and Lall Company

NOW

YOU CAN ORDER

CUSTOM MADE

INDUSTRIAL

BRUSHES!

TO EXACT SPECIFICATIONS

Neufeld and Lall Company

That "hard-to-find" brush you need quickly to meet the exact specifications of the textile industry's specialized machinery requirements can now be custom-made per your order to Neufeld and Lall Company. You will get better brushes for lasting service! Top engineers with brush problems rely upon Neufeld and Lall Company for speedy delivery of the exact, perfect brushes they need—even in emergencies! Just send in your order. It will be completed quickly to your satisfaction!

Neufeld and Lall Company

Have your old brushes rebristled like "NEW"—for better and lasting service by the brush craftsmen at Neufeld and Lall Company! Prompt service! All brushes definitely guaranteed! And if you have brushes out of date—Neufeld and Lall Company can quickly replace these too!

SEND FOR THE FACTS NOW!

Neufeld and Lall Company
1408-1410 76th St.
North Bergen, N. J.

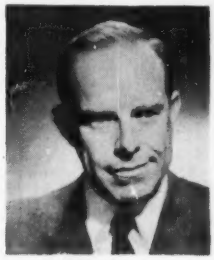
Gentlemen: MT 12-59
Please have your representative call us.
FIRM NAME: _____
ADDRESS: _____
CITY: _____ STATE: _____
YOUR NAME: _____

Neufeld and Lall Company
1408-1410 76th Street,
North Bergen, N. J.
UNion 7-1316

James H. Blore has been appointed director of fabric research and development at Fair-Tex Mills.

Joseph C. Duke has been appointed executive vice president for sales administration and public relations at Minnesota Mining & Manufacturing Co. Succeeding him as group vice president is **C. C. March.** In the same company **J. F. Whitcomb** has been promoted to general manager of the coated abrasives division.

Emre Bleier has been appointed a sales representative for the Industrial Division of Nopco Chemical Co. covering Metropolitan New York, New Jersey, Philadelphia, Wilmington, Del., and parts of Pa.



Joseph Morse

Joseph Morse has been elected financial vice president of Sun Chemical Corp.

William Cavanagh has taken charge of experimental and development fabric sales at United Piece Dye Works.

Robert B. Fort, Jr. has been named plant manager of the Winnsboro, S. C. mills of the United States Rubber Co.

Norman F. Garrett has been appointed general manager of the Whitinsville Division of Whitin Machine Works.

H. Frank McKee has been appointed assistant product sales manager for the Rayon Textile Sales Department of American Enka Corp. and **Donald Campbell** has been named assistant district sales manager at the company's Providence office.

Donald J. Eccleston has been appointed sales manager for Arnold, Hoffman & Co.

Deaths

John H. Hennessey, vice president, Berkshire Color & Chemical Co. Mr. Hennessey died of a heart attack.

Marion W. Heiss, 61, a director and former vice president of Cone Mills Corp.

F. E. Grier, 59, president of Abney Mills. Death came as the result of a heart attack.

Accurate
Yarn is under perfect tension from a central location. One dial adjustment changes tension uniformly at all tension stations.
The Lindly Electrotense. Simple, compact, inexpensive. Accurately controls yarn tension from zero to about 20 grams.
DIAL CONTROL
of YARN TENSION

at Any Number of Stations!

The Lindly ELECTROTENSE is the new, inexpensive, electro-mechanical way to control yarn tension from almost zero to about 20 grams. A turn of a single, centrally located dial applies desired tension evenly and simultaneously at all tension stations.

What are the advantages?

The Lindly ELECTROTENSE permits easy, instant change of yarn tension. It results in more uniform beams, more yarn per warp beam, less maintenance and machine down-time, fewer broken ends and better cloth.

GET THE FULL FACTS ON THIS NEW TIME-SAVING, QUALITY-IMPROVING, COST-CUTTING LINDLY SYSTEM. WRITE, WIRE OR PHONE TODAY!

It Pays to Know LINDLY the Lindly Count

LINDLY & COMPANY, INC.
248 HERRICKS ROAD
MINEOLA, NEW YORK

100/40/60	3.5			.98	.90
100/40	12			1.22	
125/25/60	3			.96	.67
150/42	0		.74½		
150/42/60	3	.80½		.82	.78
300/75	0		.71		
300/75	3	.73		.73	.71
900/46	2.5	.69		.69	
1800/92	2.5	.69		.69	

* Oiled Cones $.01 per pound extra for Graded Yarns only.
** 1 lb. Tubes $.02 per pound extra for Graded Yarns only.

Terms: Net 30 days, F.O.B. shipping point, minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight to Memphis, Tennessee allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point.

Prices subject to change without notice.

TRIACETATE

Celanese Corp. of America

Current Prices

Arnel Yarn Prices
Bright & Dull

Effective August 19, 1958

Denier and Filaments	Cones	Beams	Thick and Thin Cones
55/WKZ/15	$	$1.16	$ ....
55/2Z/15	1.32	1.33	....
75/WKZ/20	....	1.16	....
75/2Z/20	1.21	1.22	....
100/2Z/26	1.14	1.15	....
150/2Z/40	.95	.96	....
200/2Z/40	....	....	....
200/2Z/52	.92	.93	1.25
300/2Z/80	.87	.88	1.23
450/2Z/120	.86	.87	....
600/2Z/160	.85	.86	1.21

3 to 5 Turns on Cones or Beams—$.02 Additional
Premium for Black Arnel—$.25 Per Pound
Premium for Navy Arnel—$.37 Per Pound

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

CELLULOSIC HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective December 19, 1958

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	.60
1230/480	High	.60
1650/720	Low	.53
1820/720	High	.53
2200/960	High & Low	.52

Enka II

*1100/720	Low	.62
*1650/1100	Low	.55
2200/1440	Low & High	.54

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland, Tennessee; minimum freight allowed to first destination east of the Mississippi River.

* Tyrex certified viscose yarn.

American Viscose Corp.

Effective September 21, 1959

Tyrex*
Tyrex* Certified Viscose Tire Yarn

Denier	Filament	Twist	Beams	Cones
1100	980	0	.62	.62
1100	980	Z	.62	....
1650	980	0	.55	.55
1650	980	Z	.55	....

Tire Fabric Made with Tyrex* Certified Viscose Tire Yarn and Cord

Denier	Filament	Carcass	Top Ply	Breaker
1100	980/2	.74	.74	.74
		Factor Open-525	300-490	115-275
1650	980/2	.64	.65	.675

Factor determined by dividing total ends by picks.

* Tyrex is a collective trade-mark of Tyrex Inc. for Viscose Tire Yarn and Cord.

Rayon Tire Yarn
Yarn

Denier	Filament	Twist	High Strength	Tire Yarn	Super "Rayflex" 110-210-310	Super "Rayflex" 120-220-320
1100	490	Z	....	.60	....	....
1100	980	0-Z	....	....	....	.62
1150	490	Z	.60	....	....	....
1230	490	Z	.60	....	....	....
1650	980	Z	.53	.53	.54	.55
1650	980	0	....	.53	....	.55
1650	1500	Z	....	....	....	.55
1650	1500	0	....	....	....	.55
1875	980	Z	.53	....	.54	.55
2200	980	0	....	.52	....	.54
3300	1960	0	....	....	....	.54

High Strength available on cones — tubes — beams.

Tire Yarn and Super "Rayflex"

0 twist — Available on cones, beams or 10# tubes.
Z twist — Available on beams.

Sewing Thread

1100/980 Super "Rayflex"	0-Z	Cones	.63
1780/980 Super "Rayflex"	0-Z	Cones	.58

Also available in colors at .07 premium.

All yarns sold "Not Guaranteed for Dyeing".

Rayon Tire Fabric

			Factor*	Open-525	300-490	115-275
1100	980	Super-120-220-320		.74	.74	.74
1650	980	Super-110-210-310		.63	.64	.665
1650	1500	Super-120-220-320		.64	.65	.675

* Factor determined by dividing total ends by picks.

Cord on cones in regular Tire Yarn twists same as fabric prices.

Other twist combinations — prices quoted on request.

When supplied, yarns and cords in special packages take premiums indicated.

10.5 oz. Wardwell tubes	.09
1.5 lb. Regular Braider tubes	.05
3.5 lb. Tubes	.035
Adhesive Dipped yarn	.05

The following deposit charges are made on invoices.

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition — freight collect.

Rayon Tire Yarn and Fabric

Terms: Net 30 days. Seller to select and to pay transportation charges of common and contract carrier except when shipment moves West of Mississippi River in which event the actual cost of transportation to the Mississippi River crossing based on the lowest published freight rate, shall be allowed. Title to pass when merchandise is delivered to consignee. Transportation allowance based on lowest published volume rate shall be granted if merchandise is transported from shipping point in vehicle owned or leased and operated by buyer and title to pass when merchandise is delivered to same.

Prices subject to change without notice.

Celanese Corporation of America

Effective December 27, 1955

Fortisan Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	$3.00 lb.	$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "
60/2.5/80 Olive Green—Spun Dyed—OG106		4 lb. Cones	3.50 lb.

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Fortisan-36 Rayon Yarn
Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	$2.30			
300/280	0.8Z	$2.05			
300/280	3Z	$2.20			
400/400	0.8Z	$1.75			$1.70
400/400	0			$1.75	
800/800	0.8Z	$1.25	$1.25		$1.20
800/800	3Z	$1.40			
800/800	0			$1.25	
1600/1600	0.8Z	$1.15	$1.15		$1.10
1600/1600	2½Z	$1.30			
1600/1600	0			$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept. Current Prices

Effective September 21, 1959

"Super Cordura"*

Den Fil	Turns/in	All Packages
1100-720	2	$.62
1200-720	2	.62
1530-960	2	.59
1600-960	2	.55
1650-1100	2	.55
1800-1100	2	.55
2200-1440	2	.54
2400-1440	2	.54

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

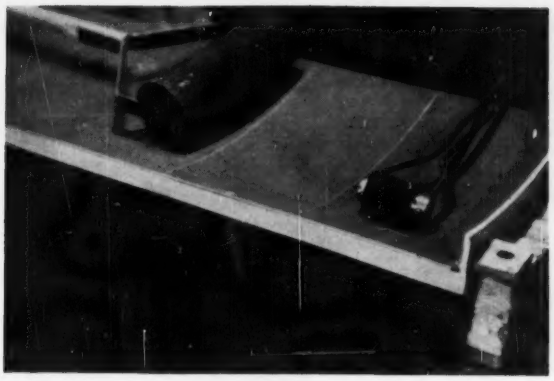
Industrial Rayon Corporation

Effective September 21, 1959

Unbleached Bright High Tenacity Yarns

Single End Beams and Cones—Type 100

Denier	Filament	Turns per Inch	Beams	Cones
1100	480	2.0 "Z"	.60	.60
1150	480	2.0 "Z"	.60	.60
1650	720	2.0 "Z"	.53	.53
1725	720	2.0 "Z"	.53	.53
2200	1000	2.0 "Z"	.52	.52
3300	1440	2.0 "Z"	.52	.52
4400	2000	2.0 "Z"	.52	.52



New Granular Card Top

Benjamin Booth Co. and Carolina Machinery Co. have introduced Gran-O-Top, new granular top for cotton cards, developed and licensed by the U.S. Agriculture Department. Mechanical details of the Southern Regional Research Laboratory granular card, said to be one of the most radical changes in carding machines in over 100 years, were disclosed at the recent annual Cotton Research Clinic of the National Cotton Council.

Dr. August L. Miller, who developed the SRRL card in association with R. A. Rusca and R. S. Brown at the New Orleans Research Laboratory of the Agriculture Department, revealed that the granular material used to provide the carding action normally supplied by flats has a special abrasive developed by Minnesota Mining and Manufacturing Co. The granular material, which resembles sandpaper, cannot load with the stock and therefore, entirely eliminates stripping and stripping waste.

Pilot plant operations conducted at the Avondale Mills plant indicate that actual production tests improved basic operations over the laboratory tests. Dust, fly and flat stripping wastes were virtually eliminated.

The combination of the new top with the Booth Micr-O-Grind needle point card clothing is said to produce yarn at greatly reduced nap count. Stripping cycles are reduced from once every three hours to once every eight hours with some mills running upwards of 24 hours. Costs of the new Gran-O-Top are reported to be less than two-thirds those of conventional cotton flats. A new sales and service organization, Carolina-Booth, has been formed to serve mills in the southeast. *For further information write the editors.*

Japanese Cotton Exports

During the first seven months of 1959 the largest shipments of Japanese cotton yarn went to Indonesia and Burma and the largest shipments of Japanese cotton cloth went to Hong Kong and Australia, according to statistics released by the Japan-U.S. Textile Information Service. Of 6,469,743 kilograms of cotton yarn exported from Japan to 59 countries, the U.S.A. received 3,366 kilograms, an amount smaller than that sold to 31 other countries. Of 579,877,784 square meters of Japanese cotton cloth exported the U.S.A. took 52,163,123 square meters, or third largest.

Meanwhile, it was predicted that Japan this year will increase its imports of American cotton to over one million bales, according to T. Murayama, of the All Japan Cotton Spinners' Association. In 1958, he said, Japan had purchased 899,541 bales.

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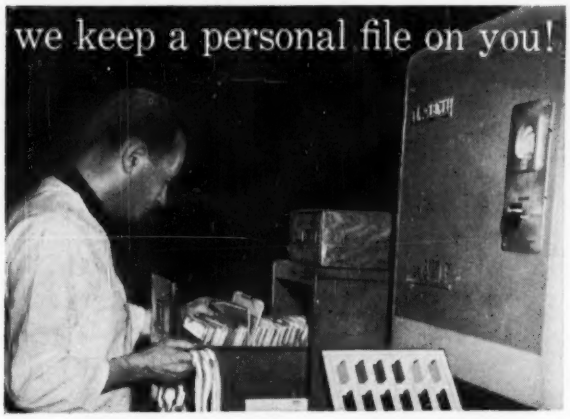

At ATLANTIC your color is "formularized"
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YARN DYEING
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Custom-matched colors. Large dye batches.
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Rayon Corporation

125 WEST 41st ST., NEW YORK 36, LONGACRE 3-4200
PLANT: 86 CRARY ST., PROVIDENCE, R. I.

Tyrex

Tyrex Certified Viscose Tire Yarn

Denier	Filament	Twist	Beams	Cones
1100	720	Z	.62	.62
1650	1100	Z	.55	.55

Type 400 prices are 4¢ more.

Terms: Net 30 days f.o.b. point of shipment, title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points in continental United States except Alaska.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corporation

Super Super High Strength Continuous Yarn Type 710

		Cones	Beams
1100/720	1.6Z	.62	.62
1650/720	2.0Z	.55	.55

Tire Cord Fabrics

Super Super High Strength Type 710

	Rolls
1100/720	.74
1650/720	.64

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold f.o.b. delivery point.

CELLULOSIC STAPLE & TOW

ACETATE

Celanese Corp. of America

Current Prices

Effective March 2, 1959

Staple

(Most Deniers Available in Bright or Dull Luster)

Celanese Acetate Staple	
3, 5.5 & 8 Denier (Regular Crimp, Type HC, Type D)	$.36
2, 12 & 17 Denier (Regular Crimp, Type HC, Type D)	.37
35 Denier	.38
50 Denier	.40
Type F—5.5 & 8 Denier	.35
Type F—12 & 17 Denier	.36
Type K—(Available under Celanese License Agreement)	.39
⅝" to ⅞" length (All Deniers)	.03 (Premium)
35 Denier Flat Filament Acetate	.40
Non-Textile Acetate Fibers	.29*

Tow (Celatow)

3, 5.5 & 8 Denier	$.37
2, 12 & 17 Denier	.38
35 Denier	.40
35 Denier Flat Filament Acetate Tow	.42
50 Denier	.42

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point.)

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

CROSS-LINKED

Courtaulds (Alabama) Inc.

Effective April 14, 1959

Corval™

Man-made, cross-linked, cellulosic staple, Bright and Dull, 1½, 3 and 5½ denier ..... $.40 per lb.

Topel®

Man-made, cross-linked, cellulosic staple, Bright and Dull, 1½, 3 and 5½ denier ..... $.37 per lb.

Terms: Net 30 days f.o.b. LeMoyne, Alabama; Minimum transportation allowed to points in U.S.A. east of Mississippi River.

RAYON

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .33
"Viscose 22"	.33
Extra Strength 1.0 Denier	.36
"Avisco XL" 1.0 Denier	.42
"Avisco XL" 1.5 & 3.0 Deniers	.39
"Avisco Crimped" 1.25 Denier	.36
"Avisco Crimped" 3.0 & 5.5 Deniers	.34
"Avisco Crimped" 8.0 & 15.0 Deniers	.35
"Avisco Super L" 8.0, 15.0 & 22.0 Deniers	.36

COLORSPUN STAPLE

1.5 Denier 1 9/16"

Color	Code	Price
Sea Foam	517	47¢
Spun Gold	614	47¢
Cascade	419	42¢
Silver Gray	208	42¢
Bridal Rose	710	42¢
Rosewood	835	47¢
Bisque	803	42¢
Champagne	833	42¢
Sandalwood	802	42¢

3.0 Denier 2"

Mint Green	505	47¢
Pale Pink	708	42¢
Bisque	803	42¢
Sandalwood	802	42¢
Gold	603	47¢
Turquoise	408	42¢
Wine	304	59¢
Gray	208	42¢
Spice Brown	800	47¢

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)

1.5, 3.0 & 5.5 Denier Per Filament	.35
9.0 Denier Per Filament	.37

Terms: Net 30 days.

American Enka Corp.

Current Prices Effective 7/1/59

Rayon Staple

Regular

	Brt.	Dull
1.5 and 3 denier	$ .33	$ .33
Crimped		
6.5 denier	.34	...
8 denier	.35	...
15 denier	.35	.35

Celanese Corp. of America

Current Prices

Effective May 1, 1959

Rayon Tow

	Bright & Dull
1.5, 3, 5.5 D.P.F. Total denier 200,000	.35
8 D.P.F. Total denier 207,000	.37

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

Courtaulds (Alabama) Inc.

Effective April 14, 1959

Rayon Staple

	Bright	Dull
1½ and 3 denier Available in 1⅛", 1-9/16" and 2".	$.33	$.33

Crimped Rayon Staple

3 and 5½ denier Available in 1-9/16" and 3".	$.34	$.34
3 denier Available in 2".		.34

Coloray® Solution Dyed Rayon Staple

Color	Price per lb.
Black	39¢
Silver Grey	41¢
Mocha	41¢
Tan	41¢
Medium Brown	41¢
Aqua	42¢
Rose	42¢
Dawn Pink	42¢
Ecru	42¢
Dark Brown	42¢
Slate Grey	45¢
Sulphur	46¢
Nugget	46¢
Light Blue	46¢
Crystal Blue	47¢
Apple Green	47¢
Sage	47¢
Peacock Blue	48¢
Medium Blue	50¢
Indian Yellow	51¢
Dark Blue	51¢
Hunter Green	51¢
Turquoise	52¢
Malachite Green	53¢
Red	58¢

In addition to the above, Black is also available in:

1½ den. 1⅛" — 5½ den. 3"

3 den. 1⅛" — 5½ den. 6"

3 den. 1-9/16"

Terms: Net 30 days f.o.b. LeMoyne, Alabama: Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Fibres Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective November 3, 1958

REGULAR	1.5 denier Bright 1 9/16", 2"	.33
VISCALON 66 (Crimped)	8 denier 3" Bright	.35
	15 denier 3" Bright	.35
	15 denier 3" Dull	.35

"KOLORBON"—Solution Dyed Rayon Staple—3" and 6"

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	.46	.46	....
Sandalwood	.46	.46	....
Nutria	.46	.46	....
Sea Green	.46	.46	....
Mint Green	.46	.46	....
Champagne	.46	.46	....
Midnight Black	.46	....	.46
Gold	.49	.49	....
Turquoise	.46	.46	....
Melon	.49	.49	....
Capri Blue	.46	.46	....
Charcoal Grey	.46	.46	....
Coco	.47	.47	....
Sable	.48	....	.48
Tangerine	.66	....	.66
Chinese Red	.66	....	.66
Larkspur Blue	.46	.46	....
Royal Blue	.66	....	.66
Lemon Peel	.55	.55	....
Kelly Green	.55	.55	....
Bitter Green	.66	....	.66

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

North American Rayon Corporation

Current Prices

Rayon Staple

Super High Tenacity	Bright
No. 1 (Unshrunk)	
1, 1.5 & 3 deniers	.40
No. 2 (Preshrunk)	
1, 1.5 & 3 deniers	.40

Rayon Tow

High Tenacity	
2200 denier, 1.0 and 1.5 D/F	57.5
4400 denier, 1.0 and 1.5 D/F	47.5

TRIACETATE

Celanese Corp. of America

Current Prices

Effective June 7, 1957

(Most Deniers Available in Bright or Dull Luster)

Arnel Staple and Tow

	Bright & Dull
Arnel Triacetate Staple	
2.5 Individual Denier	$.55
5.0 Individual Denier	.55
Arnel Triacetate Tow	
2.5 Individual Denier 114,000 Total Denier	$.60
5.0 Individual Denier 90,000 Total Denier or 180,000 Total Denier	.60

Packaged on Ball Warps

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

NON CELLULOSIC YARN

NYLON

Allied Chemical Corporation

Caprolan®

Effective August 17, 1959

Denier	Filament	Turn/In.	Twist	Type**	Package	1st Grade Price/Lb.
200	16	1½	Z	B	Cone	$1.49
520	32	1	Z	B	Bobbin	1.39
840	136	½	Z	HBT	Aluminum Tube	1.06
840	136	½	Z	HBT	Beams	1.06
1050	56	½	Z	HB	Aluminum Tube	1.15
2100	112	½	Z	HB	Aluminum Tube	1.11
Heavy Yarn						
2100	408	0	O	HB	Paper Tube*	1.06
2500	408	0	O	HB	Paper Tube*	1.06
3360	544	0	O	HB	Paper Tube*	1.05
4200	680	0	O	HB	Paper Tube*	1.05
4200	224	0	O	HB	Paper Tube*	1.10
5000	816	0	O	HB	Paper Tube*	1.05
5800	952	0	O	HB	Paper Tube*	1.05
7500	1224	0	O	HB	Paper Tube*	1.04
10000	1632	0	O	HB	Paper Tube*	1.04
15000	2448	0	O	HB	Paper Tube*	1.04

Terms—Net 30 days.
Prices subject to change without notice.
All prices quoted F.O.B. Shipping Point.
Following are invoiced as a separate item.
Bobbins—45 cents each.
Aluminum Tubes—40 cents each.
Beams—$220.00 each.
Cradles for Beams—$53.00.
* Paper Tubes non-returnable, no charge.
** Type is used to describe luster and tenacity

B—Bright.
H—High Tenacity.
T—Heat Stabilized.

Minimum transportation charges allowed and prepaid in continental United States, excluding Alaska.

American Enka Corporation

Enka Nylon Yarn Prices

Effective August 19, 1958

Den/Fil	Twist	Luster	Type	Tenacity	Pkg.	Net Wt. Pkg.	Price/Pound Std.	Sub.
15 monofil	0.5Z	Semi-dull	9506	Normal	Pirn	2 lb.	5.25	5.00
15 monofil	0.5Z	Semi-dull	9506	Normal	Beam	....	5.36	....
15 monofil	0.5Z	Dull	9514	Normal	Pirn	2 lb.	5.30	5.05
15 monofil	0.5Z	Dull	9514	Normal	Beam	....	5.41	....
15/2	0.5Z	Semi-dull	9518	Normal	Pirn	1 lb.	7.37	6.70
18/2	0.5Z	Semi-dull	....	Normal	Pirn	....	6.65	6.10
20 monofil	0.5Z	Semi-dull	9524	Normal	Pirn	1 lb.	4.95	4.50
20/2	0.5Z	Semi-dull	9478	Normal	Pirn	1 lb.	5.55	5.05
30/4	0.5Z	Semi-dull	....	Normal	Pirn	....	2.62	2.42
30/6	0.5Z	Semi-dull	9464	Normal	Pirn	2 lb.	2.36	2.21
40/8	0.5Z	Semi-dull	9558	Normal	Pirn	2 lb.	2.01	1.91
40/8	0.5Z	Semi-dull	9558	Normal	Beam	....	2.11	....
40/10	0.5Z	Dull	9564	Normal	Pirn	2 lb.	2.06	1.96
40/10	0.5Z	Dull	9564	Normal	Beam	....	2.16	....
50/13	0.5Z	Semi-dull	9562	Normal	Pirn	2 lb.	1.91	1.76
70/32	0.5Z	Semi-dull	9251	Normal	Pirn	2 lb.	1.71	1.66
100/32	0.5Z	Semi-dull	9253	Normal	Pirn	2 lb.	1.65	1.60
200/16	0.6Z	Bright	9826	Normal	Cone	4 lb.	1.49	1.44
200/16	0.5Z	Bright	9826	Normal	Beam	....	1.54	....
200/34	0.6Z	Bright	9832	Normal	Cone	4 lb.	1.49	1.44
200/34	0.5Z	Bright	9832	Normal	Beam	....	1.54	....
260/16	0.6Z	Bright	9197	Normal	Cone	4 lb.	1.49	1.39
260/34	0.6Z	Bright	9197	Normal	Cone	4 lb.	1.49	1.39
520/32	0.6Z	Bright	9546	Normal	Cone	4 lb.	1.39	1.29

Pirns charged at $.25 or $.45 each, depending on type. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination in the continental United States. In prepaying transportation charges, the seller reserves the right to select the carrier used.

The Chemstrand Corp.

Current Prices Effective June 2, 1958

Denier	Filament	Twist	Type*	Package	Standard Price/Lb.	Second Price/Lb.
10	1	O	SD	Bobbins	$8.42	$7.81
15	1	O	SD	Bobbins	5.25	5.00
15	1	O	SD	Spools	5.36	....
15	1	O	D	Bobbins	5.30	5.00
15	1	O	D	Spools	5.41	....
20	7	Z	D	Bobbins	2.96	2.61
30	10	Z	SD	Bobbins	2.36	2.21
30	10	Z	D	Bobbins	2.41	2.21
30	10	Z	HSD	Bobbins	2.36	2.21
30	26	Z	SD	Bobbins	2.49	2.21
40	7	Z	SD	Bobbins	2.11	1.81
40	10	Z	SD	Bobbins	2.01	1.91
40	13	Z	SD	Bobbins	2.01	1.91
40	13	O	SD	Draw Wind	2.01	1.91
40	13	Z	SD	Spools	2.11	....
40	13	Z	D	Bobbins	2.06	1.96
40	13	Z	D	Spools	2.16	....
50	17	Z	SD	Bobbins	1.91	1.76
50	17	Z	SD	Draw Wind	1.91	1.76
70	34	Z	SD	Bobbins	1.71	1.66
70	34	O	SD	Draw Wind	1.71	1.66
70	34	Z	SD	Spools	1.81	....
70	34	Z	B	Bobbins	1.71	1.66
70	34	O	B	Draw Wind	1.71	1.66
70	34	Z	D	Bobbins	1.76	1.66
70	34	Z	D	Spools	1.86	....
70	34	Z	HB	Bobbins	1.76	1.66
80	26	Z	SD	Bobbins	1.71	1.60
100	34	Z	SD	Bobbins	1.65	1.60
100	34	Z	SD	Spools	1.75	....
100	34	Z	HB	Bobbins	1.70	1.60
140	68	Z	SD	Bobbins	1.60	1.55
140	68	Z	SD	Spools	1.70	....
140	68	Z	B	Bobbins	1.60	1.55
200	34	Z	B	Bobbins	1.49	1.44
200	34	O	B	Draw Wind	1.49	1.44
210	34	Z	HB	Bobbins	1.49	1.44
210	34	O	HB	Draw Wind	1.49	1.44
210	34	Z	HB	Spools	1.54	....
210	34	Z	HB	Beams	1.54	....
210	34	Z	RHB	Bobbins	1.59	1.54
260	17	Z	HB	Bobbins	1.49	1.39
260	17	Z	HB	Spools	1.54	....
420	68	Z	HB	Bobbins	1.39	1.29
520	34	Z	HB	Bobbins	1.39	1.29
630	102	Z	HB	Bobbins	1.39	1.29
780	51	Z	HB	Bobbins	1.39	1.29
840	140	Z	HB	Beams	1.06	1.01
840	140	Z	HB	Tubes	1.06	1.01
840	140	O	HB	Draw Wind	1.06	1.01
840	140	Z	RHB	Beams	1.06	1.01
840	140	Z	RHB	Tubes	1.06	1.01
840	140	Z	RHB	Cones	1.10	1.01
840	140	Z	Cordage Finish		1.04	....
840	140	Z	Textile Grade		1.12	1.01
840	140	Z	Paper Tubes		1.10	1.01
1040	68	Z	SD	Tubes	1.15	1.05
1040	68	Z	HB	Tubes	1.15	1.05
1040	68	Z	RSD		1.15	1.05
1050	170	Z	HB	Tubes	1.06	.96
1050	170	Z	RHB	Tubes	1.06	.96
1680	280	Z	RHB	Beams	1.03	.98
1680	280	Z	RHB	Tubes	1.03	.98
1680	280	Z	RHB	Cones	1.07	1.02
1680	280	Z	HB	Tubes	1.03	.98
2080	136	Z	SD	Tubes	1.11	1.01
2520	420	Z	RHB	Tubes	1.06	....
15120	2520	Z	RHB	Tubes	1.04	....
15120	2520	Z	RHB	Cordage Finish	1.07	....

* *Types*: D—Dull; SD—Semi-dull; B—Bright; H—High tenacity.

Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; spools invoiced at $77.00 and $95.00 depending on type; and beams and crates for beams are invoiced at $220 and $25 respectively.

Prices subject to change without notice.

Freight prepaid within Continental United States and Puerto Rico.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
7-1	0	200	Bobbin	$9.47	$8.82
10-1	0	200	Bobbin	8.42	7.82
12-1	0	200	Bobbin	7.35	6.85
15-1	0	200	Beam	5.36	....
15-1	0	200	Bobbin	5.25	5.00
15-1	0	680	Beam	5.41	....
15-1	0	680	Bobbin	5.30	5.00
20-1	0	200	Bobbin	4.95	4.50
14-2	0.2Z	200	Bobbin	7.90	7.30
17-2	0.2Z	200	Bobbin	7.05	6.50
20-2	0.2Z	200	Bobbin	5.55	5.05
15-3	0.2Z	200	Bobbin	6.10	5.60
21-3	0.2Z	200	Bobbin	5.48	5.05
20-7	0.5Z	200	Bobbin	2.91	2.61
20-7	0.5Z	200	Beam	3.02	....
20-7	0.5Z	680	Bobbin	2.96	2.61
20-7	0.5Z	680	Beam	3.07	....
20-20	0.7Z	209	Bobbin	6.00	....
28-4	0.2Z	200	Bobbin	2.81	2.81
30-10	0.5Z	200	Bobbin	2.36	2.21
30-10	0.5Z	200	Tricot Bms.	2.46	....
30-10	0.5Z	300	Bobbin	2.51	2.36
30-10	0.5Z	680	Bobbin	2.41	2.21
30-10	0.5Z	680	Tricot Bms.	2.51	....
30-26	0.5Z	200	Bobbin	2.49	2.21
40-1	0	100	Bobbin	4.03	3.75
40-7	0.5Z	200	Bobbin	2.11	1.91
40-10	0.5Z	200	Bobbin	2.01	1.91
40-10	0.5Z	200	Tricot Beams	2.11	....
40-13	0.5Z	200	Bobbin	2.01	1.91
40-13	0.5Z	200	Tricot Bms.	2.11	....
40-13	0.5Z	400	Bobbin	2.13	1.90
40-13	0.5Z	680	Bobbin	2.06	1.96
40-13	0.5Z	680	Tricot Bms.	2.16	....
40-34	0.5Z	200	Bobbin	2.21	1.81
50-10	0.5Z	200	Bobbins	2.11	1.76
50-17	0.5Z	100/200	Bobbin	1.91	1.76
50-17	0	200	Tubes	1.91	1.76
50-17	0.5Z	680	Bobbin	2.01	1.76
60-20	0.5Z	200	Bobbin	1.82	1.65
60-34	0.5Z	300	Bobbin	1.86	1.76
70-17	0.5Z	200	Bobbin	1.71	1.66
70-34	0	100	Tubes	1.71	1.66
70-34	0.5Z	100/200	Bobbin	1.71	1.66
70-34	0	105/205	Paper Tube	1.71	1.66
70-34	0	200	Tubes	1.71	1.66
70-34	0.5Z	280	Bobbin	1.71	1.66
70-34	0.5Z	300	Bobbin	1.76	1.66
70-34	0.5Z	680	Bobbin	1.76	1.66
70-34	0	680	Tubes	1.76	1.66
80-26	0.5Z	200	Bobbin	1.71	1.60
90-26	0.5Z	200	Bobbin	1.76	1.66
100-34	0.5Z	200	Bobbin	1.65	1.60
100-34	0.5Z	300	Bobbin	1.70	1.60
100-34	0	300	Tubes	1.70	1.60
100-34	0.5Z	680	Bobbin	1.70	1.60
100-50	0.5Z	200	Bobbin	1.71	1.60
110-50	0.5Z	200	Bobbin	1.71	1.60
140-68	0.5Z	100	Bobbins	1.60	1.55
140-68	0	200	Tubes	1.60	1.55
140-68	0.5Z	200	Bobbin	1.60	1.55
140-68	0	205	Tube	1.60	1.55
140-68	0.5Z	300	Bobbin	1.65	1.55
200-20	1Z	100	Bobbin	1.49	1.44
200-34	0	100	Tubes	1.49	1.44
200-34	0.7Z	100	Bobbin	1.49	1.44
200-34	0	105	Tube	1.49	1.44
200-34	0.7Z	680	Bobbin	1.54	1.44
200-68	0.7Z	100/200	Bobbin	1.56	1.46
210-34	0	300	Tubes	1.49	1.44
210-34	0.7Z	300	Bobbin	1.49	1.44
210-34	0.7Z	300	Beam	1.54	....
210-34	0	305	Tube	1.49	1.44
210-34	0.7Z	330	Bobbin	1.59	1.44
260-17	1Z	300	Bobbin	1.49	1.39
400-68	0.7Z	100	Bobbin	1.39	1.29
420-68	1Z	300	Bobbin	1.39	1.29
420-68	1Z	300	Beams	1.44	....
520-34	1Z	300	Bobbin	1.39	1.29
630-102	0.7Z	300	Bobbin	1.39	1.29
780-51	1Z	300	Bobbin	1.39	1.29
890-140	0.5Z	100	Bobbin	1.39	1.29
840-140	0.5Z	300/700	Al. Tbs. & Beams	1.06	1.01
1680-280	0.5Z	300/700	Al. Tbs. & Beams	1.03	.98

Color-Sealed Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
30-10	0.5Z	140	Bobbin	$2.71	$2.56
40-13	0.5Z	140	Bobbin	2.36	2.16
70-34	0.5Z	140	Bobbin	2.06	2.01
100-34	0.5Z	140	Bobbin	2.00	1.95
100-34	0	140	Tubes	2.00	1.95
200-20	0.7Z	140	Bobbin	1.84	1.79
200-34	0.7Z	140	Bobbin	1.84	1.79
260-17	1Z	140	Bobbin	1.84	1.79

Industrial Yarn				Price/Lb.
840-140	0.5Z	*707	Cone	$1.04
5040-840	0	*707	Paper Tube	1.08
7560-1260	0	*707	Paper Tube	1.07
10080-1680	0	*707	Paper Tube	1.07
15120-2520	0	*707	Paper Tube	1.07
* Made specifically for cordage use.				
2520-420	0	700	Paper Tube	$1.06
4200-700	0	700	Paper Tube	1.05
5040-840	0	700	Paper Tube	1.05
7560-1260	0	700	Paper Tube	1.04
10080-1680	0	700	Paper Tube	1.04
15120-2520	0	700	Paper Tube	1.04

These prices are subject to change without notice. Terms: Net 30 Days.

Types

Type 100—Bright, normal tenacity.
Type 105—Bright, normal tenacity, low shrinkage (5-7%)
Type 140—Bright, color-sealed, black, normal tenacity.
Type 200—Semidull, normal tenacity.
Type 205—Semidull, normal tenacity, low shrinkage (5-7%)
Type 209—Semidull, normal tenacity, improved light durability and dye light fastness.
Type 280—Semidull, normal tenacity, improved light durability and dye light fastness.
Type 300—Bright, high tenacity.
Type 305—Bright, high tenacity, low shrinkage (5-7%)
Type 330—Bright, high tenacity, more heat & light resistant.
Type 400—Semidull, high tenacity.
Type 680—Dull, normal tenacity.
Type 700—Bright, high tenacity.
Type 707—Bright, high tenacity cordage yarn.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

Following are invoiced as a separate item.
Bobbins—25 cents or 45 cents depending on type
Aluminum Tube—40¢ each
Draw Winder Tubes—$.70 or $1.00 depending on type
Tire Cord Beams—$220.00 each
Cradles for Tire Cord Beams—$115.00 each
Tricot Beams—$95.00 each
Cradles for Tricot Beams—$130.00 each
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co., Inc.)

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"*

Denier & Filament	Turns/Inch	Luster	Type*	Tubes 1st Gr.
30-14	0	Bright	55	$2.71
30-20	0	Semidull	56	2.71
40-27	0	Semidull	56	2.31
40-27	0	Bright	55	2.31
40-27	0	Dull	57	2.36
70-34	0	Semidull	56	1.91
70-14	0	Bright	55	1.91
70-34	0	Bright	55	1.91
70-34	0	Dull	57	1.96
100-34	0	Semidull	56	1.84
140-28	0	Bright	55	1.79
150-34	0	Semidull	56	1.79
220-50	0	Bright	51	1.76
250-50	0	Bright	55	1.76
1100-250	0	Bright	51	1.50
1100-250	0	Bright	52	1.50

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the Continental limits of the U. S., excluding Alaska.

Yarn Types

* Type:
Type 51—Bright, high tenacity.
Type 52—Bright, high tenacity.
Type 55—Bright, normal tenacity.
Type 56—Semidull, normal tenacity.
Type 57—Dull, normal tenacity.

Tubes are invoiced as a separate item at $.70 each.

* "DACRON" is DuPont's registered trade-mark for its polyester fiber.

SARAN

The National Plastics Products Company—Fibers Division

Odenton, Maryland

41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)

Current Prices:

CONTINUOUS FILAMENT

Type	Twist p. i.	Natural	Colors
1240/10	3	$1.32	$1.37
750/20*	3	1.75	1.80

* For filter fabrics and other industrial purposes only.

F.O.B. Odenton, Maryland.

Terms: Net 30 days.

NON CELLULOSIC STAPLE & TOW ACRYLIC

American Cyanamid Co.

Fibers Division

Effective Date: June 15, 1959

Cyanamid Acrylic Staple

	1st Grade Price (per pound)
2.0 Denier Bright and Semi-Dull	$1.28
3.0 Denier Bright and Semi-Dull	1.18
5.0 Denier Bright and Semi-Dull	1.18
15.0 Denier Bright, Semi-Dull and Dull	1.01

Staple Lengths: 1½", 2", 2½", 3", 3½", 4", 4½".

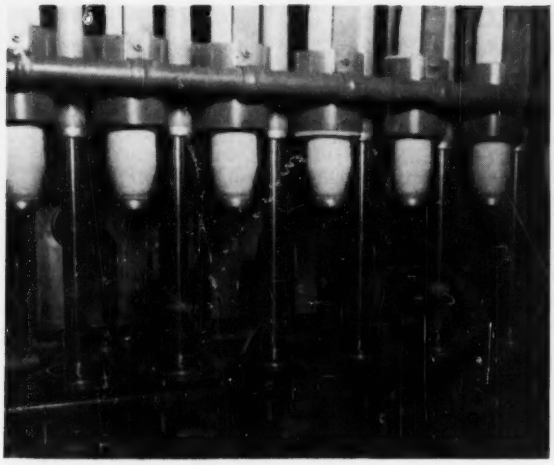
Information provided on request for Deniers, Lengths and Lusters not listed above.

Prices are subject to change without notice.

Terms: Net 30 Days.

F.O.B. Shipping Point—Minimum transportation allowed (Seller's route and method) within the continental limits of the United States excluding Alaska. If Buyer requests and Seller agrees to a route or method involving higher than minimum rate, Buyer shall pay the excess transportation cost.

Note: CRESLAN® is Cyanamid's registered trademark for certain of its acrylic fibers. Use of this trademark is authorized only on properly constructed fabrics, after they have been tested and approved by Cyanamid.



Automatic Doffing

Automatic doffing machines are now being offered by two companies. Until recently, according to Deering Milliken Research Corp., doffing posed such problems to efforts to mechanize the job that no machine aids had been developed. Doffing, the act of lifting full bobbins of yarn from a spinning frame and replacing them with empty bobbins, is a job classification which was created with the advent of machine spinning more than 100 years ago.

Deering Milliken reports its doffing machine will eliminate the job classification of doffer completely, with the doffer operated by a machine tender. Whereas the doffer removes one or two bobbins at a time, the automatic doffing machine, in one motion, lifts full bobbins from the entire spinning frame. This could involve several hundred individual packages. In another single motion, the machine loads the spinning frame with empty bobbins.

Deering Milliken says the automatic operation reduces the down time of the spinning frame to about 15% and will result in an estimated doffing labor savings of 30% to 50%, plus additional savings in indirect labor costs and fixed overhead cost. In addition, yarn quality is improved.

Similar advantages are geing put forward for the Auto-Doffer, a completely automatic doffing device built by Kanegafuchi Machine Co., of Japan. The Auto-Doffer is handled exclusively in the U. S., Canada and Mexico by Edward S. Rudnick. The Japanese device is said to "pay for itself" in less than one year. It furthermore allows for reversing the trend toward larger ring diameters by utilizing smaller rings with considerably higher spindle and front roll speeds, thereby increasing production. *For further information write the editors.*

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LAMBERTVILLE, NEW JERSEY

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JAMES H. CARVER Box 22, Rutherfordton, N. C.
CRAWFORD "JACK" RHYMER Box 2261, Greenville, S. C.

The Chemstrand Corp.

Current Prices

"Acrilan"*

Effective January 1, 1959

	Regular Acrilan	Acrilan 16
2.0 denier Semi-Dull and Bright staple & tow	$1.24	$1.24
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.18	1.18
3.0 denier Bright & Semi-dull staple & tow	1.18	1.18
5.0 denier Bright & Semi-dull staple & tow	1.18	1.18
8.0 denier Bright & Semi-dull staple	1.18	1.18
15.0 denier Bright & Semi-dull staple	1.01	1.05

Terms: Net 30 days. Freight prepaid within Continental U. S. & Puerto Rico.

* "Acrilan" is Chemstrand's registered trademark for its acrylic fiber.

The Dow Chemical Company

Textile Fibers Department

Current Prices

"Zefran"*

2.0 denier Semidull & Bright—Staple only	$1.28
3.0 denier Semidull & Bright—Staple only	1.28
6.0 denier Semidull & Bright—Staple only	1.18

Terms: Net 30 days.

Transportation Terms: F.O.B. shipping point—Freight prepaid our route within the continental limits of the U. S., excluding Alaska.

* "Zefran is Dow's registered trademark for its acrylic fiber.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon"** Acrylic Staple & Tow

Type 42	Staple Length	Tow Blds.	1st Grade
1.0 Denier Semidull	1¼, 1½, 2, 2½, 3	390M	$1.28
2.0 Denier Semidull & Bright	1¼, 1½, 2, 2½, 3, 4½	470M	1.28
3.0 Denier Semidull & Bright	1¼, 1½, 2, 2½, 3, 4½	470M	1.28
3.0 Denier Semidull Color-sealed Black	1¼, 1½, 2, 2½, 3, 4½	470M	1.63
6.0 Denier Semidull & Bright	1½, 2, 2½, 3, 4½	470M	1.18
6.0 Denier Color-sealed Black	1½, 2, 2½, 3, 4½	470M	1.55
4.5 Denier Semidull	1½, 2, 2½, 3, 4½	470M	1.18
10.0 Denier Semidull & Bright	1½, 2, 2½, 3, 4½	470M	1.18

Tow—Total Denier 470,000

Staple Lengths—1½", 2", 2½", 3", 4½"

High Shrinkage Staple price as Regular Staple

Type 25 $1.18

This product is designed for *Cotton/Rayon System* Spinning and is 2.5 denier, 1½" semidull regular shrinkage staple.

Type 38—4.1 Denier—Semidull—520M Tow $1.28

This product can be dyed, stretched and cut to produce staple which will shrink as much as 38% when subjected to heat.

Type 39 $.94

This product is designed for *woolen system spinning* and is a blend of deniers (average 4.2) with a variable cut length.

Type 39A $.99

This product is designed for *woolen system spinning* and is a blend of predominately fine deniers (average 2.4) with a variable cut length.

Type 39B $.94

This product is designed for *woolen system spinning* and is a blend of predominately heavy deniers (average 6.5) with a variable cut length.

F.O.B. Shipping Point—Freight prepaid our route within the continental limits of the United States, excluding Alaska.

MODACRYLIC

Eastman Chemical Products, Inc.
Tennessee Eastman Co.

Effective November 3, 1958

"Verel"* Staple and Tow

Deniers	Dull and Bright
2 and 3	$1.02 per pound
5, 8, 12, 16, and 20	.92
24 denier	.97

Prices are subject to change without notice.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in continental United States, except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Verel" is a trade-mark of the Eastman Kodak Co

Union Carbide Chemicals Co.

Div. Union Carbide Corp

Textile Fibers Dept.

Effective October 1, 1957

Dynel Staple & Tow

Natural Dynel	
3, 6, and 12 Denier, Staple and Tow	1.10 per lb.
24 Denier, Staple and Tow	1.05 per lb.
Dynel Spun with Light Colors:	
Blond Pewter or Gray	
3 and 6 Denier, Staple and Tow	1.30 per lb.
Dynel Spun with Dark Colors:	
Black, Charcoal, Brown, Caramel, Green, and Blue	
3 and 6 Denier, Staple and Tow	1.40 per lb.
Dynel Type 63 High Shrinkage (3 Denier only)	Add $.05 per lb. to above prices

Prices are quoted f.o.b. South Charleston, W. Va.

NYLON

American Enka Corp.

Effective August 19, 1958

Enka Nylon (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.28
6	bright	3, 4½	1.28
8	bright	2⅝	1.15
10	bright	3	1.08
15	bright	3	1.08
15	semi-dull	3	1.08

Deniers and lengths of staple not listed above are available upon special request.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination in the continental United States. In prepaying transportation charges, the seller reserves the right to select the carrier used.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Staple and Tow

Denier	Type	Staple Lengths	Tow Bundle	1st. Grade Price/Lb.	2nd Grade Staple Only
1.5	200	1⅛"—4½"	None made	$1.33	$1.18
1.5	201	1⅛"—4½"	None made	1.35	1.20
2.2	420	1½" only	None made	1.28	1.13
3.0	100/200	1⅛"—4½"	430M	1.28	1.13
3.0	101/201	1⅛"—4½"	455M	1.30	1.15
6.0	100	1⅛"—6½"	330M	1.28	1.13
6.0	101	1⅛"—6½"	345M	1.30	1.15
15.0	100	1½"—6½"	425M	1.08	....
15.0	101	1½"—6½"	None made	1.10	....
15.0	600	1½"—6½"	425M	1.10	....
15.0	601	1½"—6½"	None made	1.12	....

Staple lengths are restricted to the range shown opposite each denier above. The actual cut lengths within these ranges are as follows:

1⅛, 1½, 2, 2½, 3, 4½ and 6½

Types

Type 100 Bright, normal tenacity, not heatset.
Type 101 Bright, normal tenacity, heatset.
Type 200 Semidull, normal tenacity, not heatset.
Type 201 Semidull, normal tenacity, heatset
Type 420 Semidull, high tenacity, high modulus, no crimp.
Type 600 Dull normal tenacity, not heatset.
Type 601 Dull normal tenacity, heatset.
These prices are subject to changes without notice.
Terms—Net 30 Days.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

Industrial Rayon Corp.

Effective August 18, 1958

Nylon Staple

1.5 denier	$1.33 per lb.
2, 3 and 6 denier	1.28 per lb.
8 denier	1.15 per lb.
15 and 22 denier	1.08 per lb.

Bright, semi-dull, and full-dull. Required lengths.

NYTRIL

B. F. Goodrich Chemical Co.
A division of The B. F. Goodrich Co.

DARVAN

Effective Nov. 21, 1958

Type	Price Per Pound Net Crimp Set	Crimp Set
3, 4½ and 6 Denier	$1.45	$1.50
1½, 2 Denier	$1.50	$1.55

Pack in 100 Lb. Bales, Net
Staple lengths 1½, 2, 3, 4½
Tow—90,000 Total Denier
Bright, Semi-dull, Dull

(Deniers and lengths of staple not listed above are available upon special request.)

Terms: Net 30 Days.

F.O.B. Shipping Point (Avon Lake, Ohio) Minimum freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if overland, or port of exit of purchaser's choice east of the Mississippi River.

POLYESTER

Beaunit Mills Inc.

"Vycron"
Polyester (Semi-Dull)

Current Prices — April 13, 1959

	Denier	Cut*	Per Lb.
Staple	1.5	1½"	$1.36
	3.0	2"	1.36

(* Can be cut to other lengths when desired).

Tow for Converters (Tow Bundle 200,000 Den.)	1.5 den.	1.36
	3.0 den.	1.36
Tow Yarn for Direct Spinners	1.5 den. (1680/1120)	1.45
	1.5 den. (3360/2240)	1.36
	3.0 den. (3360/1120)	1.36

Time Study

(Continued from Page 60)

follow the weaver from loom to loom, ignoring walking times and irrelevant items. Record the results, as shown in Figure 1. Note that frequencies are not recorded, nor are idle times.

5. Check the data obtained. For example, in Figure 1 the lack of homogeneity of data for Element No. 1 indicates the presence of at least two dissimilar elements. A check revealed that the longer times were for breaks at the rear of the loom, and the shorter times pertained to breaks in front of the loom. The form was amended accordingly. From 20 to 30 readings were obtained.
6. Obtain the total and the trial average unit times for each task performed. Omitting the bulk of the readings, the summary part of the form is shown in Figure 2.

It is desirable to repeat this study at a later time, and to obtain similar data for each of the other weavers in the meantime so that many study sheets similar to one shown will be completed.

Nothing has been done yet in regard to frequency. The determination of frequencies and the synthesis of "t" will be followed through in the next article.

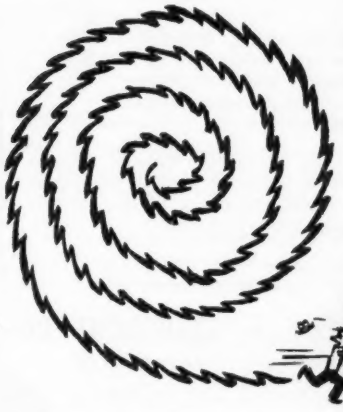
The Borregaard Co., Inc.

Norway House, 290 Madison Avenue
NEW YORK 17, NEW YORK

Norwegian Viscose Rayon Staple Fiber

Bright Supral Dull

Sole Agent For **United States, Canada, Mexico, Cuba**



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1260/840	1260/420	1.50
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3360/2240	3360/1120	1.36

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Textile Fibers Dept.

Current Prices

"Dacron"* Staple and Tow

Denier	Luster	Type*	Length	Tow Bundle	1st Gr.
1.25	Semidull	54	1¼"-3"	None made	$1.36
1.5	Semidull	64	Tow only	550M	1.41
1.5	Semidull	54	1¼"-3" & Tow	550M	1.36
3.0	Semidull	64	1¼"-4½" & Tow	450M	1.41
3.0	Semidull	54	1¼"-4½" & Tow	450M	1.36
3.0	Semidull	61	1¼"-4½"	None made	1.36
4.5	Semidull	64	1¼"-4½" & Tow	450M	1.36
4.5	Semidull	54	1¼"-4¼" & Tow	450M	1.31
6.0	Semidull	64	1¼"-4½" & Tow	450M	1.36
6.0	Semidull	54	1¼"-4½" & Tow	450M	1.31
6.0	Semidull	61	1¼"-4½"	None made	1.31

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Type 54—Semidull, Normal Tenacity.
Type 61—Round Cross-section Industrial Staple having 45% Boil-off Shrinkage.
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Tennessee Eastman Co. Effective September 15, 1958

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1½ denier	$1.60
3 and 4½ denier	1.50

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in continental United States, except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Kodel" is a trade-mark of the Eastman Kodak Company.

VINYON

American Viscose Corp. Effective October 1, 1956

Avisco Vinyon Staple

3.0 denier	½" unopened	$.80 per lb.
3.0 "	1¼" unopened	.80 per lb.
3.0 "	1¼" opened	.90 per lb.
3.0 "	2" opened	.90 per lb.
3.0 "	2" unopened	.80 per lb.
5.5 "	1" opened	.90 per lb.
5.5 "	3½" opened	.90 per lb.
5.5 "	3½" unopened	.80 per lb.

Terms: Net 30 days.

SARAN

The National Plastics Products Company—Fibers Division
Odenton, Maryland

Current Prices: Saran Staple

Type	Denier	Natural	Colors
2N	22	$0.70	$0.75
2N	16	.74	.79
3Q*	22	.68	.72

In any staple length 1⅛ to 6". Also 45 denier, 7" cut.
* For carpets and industrial fabrics.
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Allied Chemical

Industrial to Make Polypropylene

Industrial Rayon Corp., producer of rayon and nylon staple fiber, has added a third fiber to its roster—polypropylene. Last month Industrial revealed plans for semi-commercial production of polypropylene staple fiber, tow and continuous filament yarns under the trade name "Prolene."

The decision to manufacture larger amounts of polypropylene fibers for intensive testing in a broad range of end products follows more than a year of pilot plant production and testing in a limited number of end uses, according to Frederick L. Bissinger, vice president and general manager.

Prolene is said to be lighter in weight than other synthetic fibers and possesses higher strength and good resistance to abrasion. It also is reported to be unaffected by water and common chemicals. The light weight of Prolene will enable greater coverage, pound for pound, than other synthetic fibers and will allow for more economical manufacture of many products, it was stated.

Industrial Rayon noted that various phases of its prolene developmental program were carried out with the cooperation of Hercules Powder Co. which produces the polypropylene polymers used in the manufacture of its fibers. Hercules was the first commercial producer of polypropylene in this country.

Prolene will be manufactured in Covington, Va., where the company presently has nylon and rayon facilities, and production also will be continued at the pilot plant in Cleveland. Prolene staple and tow will be made in two to 15 denier per filament size and continuous filament yarns will be available in 210 denier and up.

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Calendar of Coming Events

Dec. 2—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Dec. 4—AATCC Northern New England Section joint symposium with ASME Textile Engineering Div. Smith House, Cambridge, Mass.
Dec. 4—AATCC Rhode Island Section, annual meeting. Johnson's Hummocks Grille, Providence, R. I.
Dec. 4—AATCC Delaware Valley Section. Philadelphia, Pa.
Dec. 4—AATCC Western New England Section. Hartford, Conn.
Dec. 5—Southern Textile Association Piedmont Div. Johnston Memorial YMCA, Charlotte, N. C.

1960

Jan. 6—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Jan. 25-28—Plant Maintenance & Engineering Show. Convention Hall, Philadelphia, Pa.
Feb. 2-4—SPI Reinforced Plastics Division conference. Edgewater Beach Hotel, Chicago, Ill.
Feb. 3—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Feb. 8-9—National Cotton Council annual convention. Dallas, Texas.
Feb. 18-19—American Society for Quality Control, Textile Div. annual conference. Clemson House, Clemson, S. C.
Mar. 2—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Mar. 10-11—Fiber Society spring meeting. Roosevelt Hotel, New Orleans, La.
Apr. 6—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Apr. 7-9—American Cotton Manufacturers Institute annual convention. American Hotel, Bar Harbor, Fla.
Apr. 20-22—Alabama Textile Manufacturers Association, annual meeting. Buena Vista Hotel, Biloxi, Miss.
Apr. 22—Textile Institute, annual general meeting. Midland Hotel, Manchester, England.
Apr. 26—Institute of Textile Technology, Charlotteville, Va. Meetings of Technical Advisory Committee and Board of Trustees.
Apr. 28-30—Phi Psi National Textile Fraternity 57th annual convention. Hotel Roosevelt, New York, N. Y.
Apr. 29—Underwear Institute annual meeting. Hotel Biltmore, New York, N. Y.
May 4—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
May 23-27—American Textile Machinery Exhibition. Auditorium, Atlantic City, N. J.
May 25-26—Tufted Textile Manufacturers Association annual convention. Fontainebleau Hotel, Miami Beach, Fla.
May 31-Jun. 2—Cotton Research Clinic. Grove Park Inn, Asheville, N. C.
Jun. 1—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Jun. 23-25—Southern Textile Association annual convention. Grove Park Inn, Asheville, N. C.
Oct. 3-7—Southern Textile Exposition. Textile Hall, Greenville, S. C.
Oct. 6-8—AATCC national convention. Sheraton Hotel, Philadelphia, Pa.

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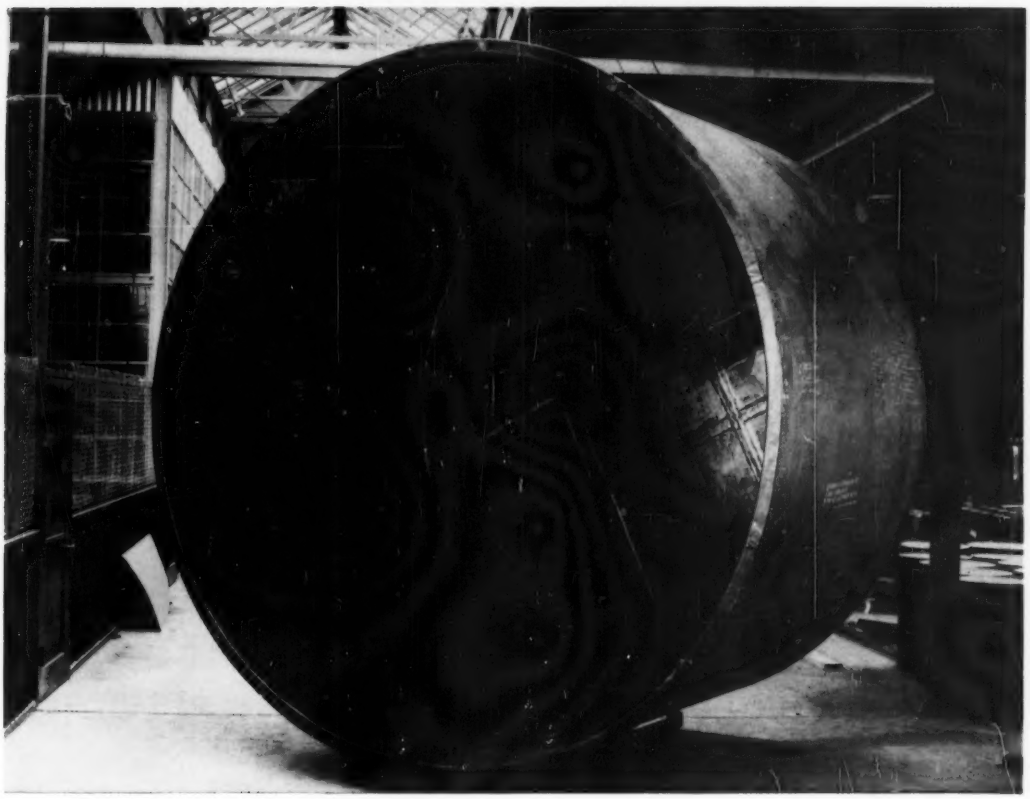

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